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JNN-N

JOINT NETWORK NODE - NETWORK

Interfacing Satellite and Terrestrial Transmission Resources to the Battalion Level

Chief of Signal's Comments

JNN capability brings positive feedback from field

Regiment:

It has been more than a year since I assumed duties as your Chief of Signal. I want to use my comments in this issue of your *Army Communicator* to give you a status report on the great things your Regiment is doing.

You have read in previous editions of the *Army Communicator* about our newest piece of equipment, the Joint Network Node. It continues to be fielded to units across the force. We are receiving a great deal of positive feedback from the field on this piece of equipment and the capability it brings. It stands as a tremendous success story of rapid acquisition of commercial off-the-shelf technology and subsequent fielding to units as they deploy.

The many supporting elements of the JNN continue to fall in place. The action to create our newest military occupational specialty, 25N, created specifically for the JNN, continues to be processed at the same time we are already training these Soldiers in Advanced Individual Training.

Our 25F Soldiers who have been trained in JNN will be reclassified to 25N. If you are a 25F Soldier you need not be concerned about your future. We will definitely need you for some time in the future to operate mobile subscriber equipment. And as more Voice-over-IP switches are fielded, 25F Soldiers will be trained on this equipment.

BG Randolph P. Strong
Chief of Signal

In this edition of your *Army Communicator*, I invite you to read a number of articles that have been compiled and submitted by the great folks at Program Executive Office Command, Control, Communications Tactical Chief Information Office, Fort Monmouth, N.J.

On training, our LandWarNet-University, which we have discussed in previous issues of the *Army Communicator,* continues to improve and provide an invaluable service to our Soldiers in the field. LWN-U continuously trains and educates Soldiers and Leaders from the classroom to the battlefield. If you are one of the few who have not visited our LWN-U site, I encourage you to do so.

I am convinced that the warrior training our 15th Regimental Signal Brigade is providing to our Advanced Individual Training Soldiers is critical to the combat capability of the units to which they will be assigned. We are fusing the Warrior Ethos with core competency academics by including weapons immersion, combatives, and more, all taught in both classroom and realistic Forward Operating Base environments. Signal Warriors graduate from AIT in the right frame of mind, with the right training upon which they can depend when deployed. Our fused approach to training is value-added because it adds critical combat skills to our training without sacrificing the amount or quality of MOS-specific tasks and drills.

The Regiment's Soldiers are doing fantastic. You are providing world class communications to a multitude of different subscribers in a very harsh environment. Our Signal brigades and battalions augmented by additional units both from the Reserve Component are doing tremendous work. These are bitter sweet reports because at the same time, our conversion to the Modular Structure will deactivate many of

See Chief of Signal Comments continued on Inside Back Cover

It (JNN) stands as a tremendous success story of rapid acquisition of commercial off-the-shelf technology and subsequent fielding to units as they deploy. The many supporting elements of the JNN continue to fall in place.

U.S. ARMY SIGNAL CENTER AND FORT GORDON

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Cover by Billy Cheney

Special announcement:

***'Army Communicator'* goes digital on AKO**
See inside back cover for more information.

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JNN-N advances Army towards modularity

By Josh Davidson

You've spent weeks preparing for the big meeting. A lot of your time has been spent in front of a computer developing spreadsheets and PowerPoint slides, grabbing data off of the Internet and communicating electronically with your co-workers through e-mail. But what was it like before you had the tools you use? Did you manually draw out your presentations or spend hours on the phone working out issues? Where would you be without the Internet or connectivity?

Now imagine that you're in the desert surrounded by enemy forces, with a group of Soldiers who depend on your ability to make quick decisions. How will you navigate your unit's way or find the location of your buddies? Can you do it quickly? The Joint Network Node-Network lets the Warfighter connect to the digitized battlefield systems that allow him to make quick decisions with Situational Awareness. It's the only network that brings Internet capabilities to the battlefield.

"JNN-Network is the Internet connection you use in your office," said LTC Rodney Mentzer, Product Manager for JNN. "JNN-Network is the remote version of that, it takes it off of satellite and gives the exact same capability (with a smaller communications pipe)."

JNN-N is a converged tactical communications network providing voice, data, and video capability to connect the battalion level Warfighter to areas throughout the world at the quick halt. Its predecessor, the Mobile Subscriber Equipment network, provided network services only as far as the brigade level. The JNN-Network provides the terrestrial line-of-sight and beyond-line-of-sight satellite communications that allow for a greater flexibility of troop movement.

The JNN-N allows the Warfighter to hook up to systems that provide the capabilities to map their course, receive quick reports of their buddies' movements, logistics data and more.

The beginning of JNN-N

The story behind JNN-N began with the launches of 2001's Operation Enduring Freedom in Afghanistan and 2003's Operation Iraqi Freedom. The system was developed as an immediate response to the

need for a beyond line-of-sight communications pipe.

"JNN-Network, which has been in the Army now for almost three years, has been a huge leap in capability for our deployed forces," said MG Dennis C. Moran, vice director for Command, Control, Communications, and Computer Systems. "It was something that was needed based on our experience from OIF and OEF. The Chief Information Office/G6, in coordination with PEO C3T (Program Executive Office for Command, Control and Communications Tactical), was able to very quickly deliver a BLOS capability that allowed the Warfighter not to be bound to the Earth, but to be dependent on space for his wideband communications. I believe the maturity that we're seeing in that system now is providing huge capability and it gets better with every spiral that we field."

The need for BLOS capabilities surfaced when GEN William S. Wallace led the Army in a run for Baghdad. Wallace recognized that the pace of the war outran the coalition forces ability to communicate, which revealed a gaping hole in the way they fought.

As the 3rd Infantry Division was deployed to Iraq to support OIF, the need for an evolution of the MSE, the 20-year-old existing line-of-sight satellite communications network, became evident.

"JNN-Network's contribution to OIF and OEF is rather dramatic, in my judgment," said Wallace, who is now the commanding general, United States Army Training and Doctrine Command. "It's taken us from exclusively line-of-sight communications into satellite communications, which is kind of the fundamental thing that it does. It also allows us to operate over a larger battle space than we otherwise would not be able to do with pure line-of-sight communications."

At the time of JNN-N's inception, units were asked to cover larger geographic areas to meet their mission, said James Sintic, the chief engineer for Tactical Networking Systems in Project Manager Tactical Radio Communications Systems. PdM JNN-Network is within PM TRCS of the PEO C3T.

In 2004, the two PEOs headquartered at Fort Monmouth, PEO C3T and Program Executive Office Intelligence, Electronic Warfare and Sensors along with the Communications-Electronics Command joined together to form the Communications-Electronics Life Cycle Management Command.

The Soldiers out ran their communications links and the need led to the creation of task force networks at the Signal Center and eventually JNN-N, he said.

The Signal Center staff originally developed the requirements for how the JNN-N needed to operate. The requirements were based on all lessons learned in OIF and OEF.
- James Sintic

The original managers were Robert Golden, former Project Manager for TRCS; Barton Halpern, deputy PM TRCS; and Robert Wilson, the former deputy PdM of JNN. The Signal Center staff included COL James Costigan, CW4 Four Leslie Cornwall, LTC Paul Craft, and MAJ Neil Khatod.

The Signal Center staff originally developed the requirements for how the JNN-N needed to operate, Sintic said. The requirements were based on all lessons learned in OIF and OEF, he said. Geographically speaking, there was less land to overtake during OEF, in Afghanistan in comparison to the large geographic area overtaken during OIF in Iraq, he said. While five technicians developed JNN-N's original solution, many more were involved in the actual materiel developed solution that was based on the Signal Center's requirements, he said.

The team spent many hours developing drawings, traveling to various Army bases and creating what is now JNN-N.

"They were basically 12 to 14 hour days for most of the System Engineering team for 16 months," Sintic said.

The initial study on the system was performed from September to November of 2003. The first JNN-Network equipment arrived at Fort Stewart, Ga., by Aug. 15, 2004.

JNN-N was developed, trained, and fielded to the second rotation of the 3rd Infantry Division in less than 180 days of the release of Headquarters Department of the Army allocated funding.

A feat originally declared "impossible" by Army Headquarters G-8 leadership, the very same G-8 senior leader later called the October 2004 delivery of the JNN-N systems to the 3 ID "an acquisition miracle."

General Dynamics Corp. eventually became involved and added its staff members to learn how the original developers created the system, Sintic said. That way, the technical team could shift its efforts towards running PdM JNN.

DataPath, Inc. and the CIO/G6 were also very instrumental in the system's creation, Sintic said.

JNN-N is really an evolutionary use of systems for the products used by the Army's Stryker Brigades, Sintic said. It gave Stryker Brigades a capability that was 100 times greater than what they already had and allowed them to "spurt out" geographically, he said.

Since its deployment to the original unit, any minor deficiencies were corrected and JNN-Network now provides more bandwidth. In terms of capability, JNN-N has remained mostly unchanged since spiral one.

Supporting a Modular Force

The focus of modularity is turning each Brigade Combat Team into a self-sufficient entity that could fight independent "of a parent or independent of support from sister brigades," Mentzer said.

"Additionally, under that construct, modularity is very broad-based," he said.

That means, the brigade elements are often not co-located or within line-of-sight of one another, he said.

"So, the existing MSE that was a communications asset for the Army when we first went into Iraq as part of OIF, proved to be incapable of supporting the modular concept and the fight that we were entering," Mentzer said. "That's the entire reason that the JNN-Network was born. It was born to enable that beyond-line-of-sight capability that would enable us to transform our Army from divisional-based assets to individual Brigade Combat Team-based assets that could then deploy autonomously way beyond-line-of-sight, yet still communicate and still share information as far down into the food chain of the Soldiers as we could possibly get."

JNN-N: From a technical standpoint

JNN-N lets Soldiers communicate to areas throughout the world with secure, Internet Protocol voice, video and data communications capabilities via satellite.

With JNN-N, Soldiers who could only communicate one-on-one in the past, can now simultaneously interface with multiple users, Mentzer said.

"The JNN-Network provides connectivity for hundreds of users not just one," he said.

It relies on Cisco Systems IP routers, switches, Voice-over-IP call processing software and telephones along with net.com Promina Multiplexers, Redcom Laboratories private branch exchange switches and Juniper Networks NetScreen firewalls.

"90 percent of the equipment used by the JNN-Network is commercially available…We wanted to be cutting edge, but couldn't be bleeding edge because of the risks involved," Sintic said. "We had so little time to turn on the capabilities, so we had to know that the gear would be interoperable with each other. And we expect these networks to be in use for a long time, so supportability was an issue. We had to go with proven technologies from industry leaders who were comfortable in the tactical arena. We just couldn't take the risk of partnering with unproven vendors or startups who might get gobbled up by larger players."

The JNN-N equipment suite is comprised of a shelter mounted on a High Mobility Multi-Wheeled Vehicle, Ku band SATCOM trailers, transit cases and Hub Sets. The JNN shelter houses equipment such as multiplexers, routers, servers, PBXs, modems, cryptographic equipment, and processors. The JNN shelter is paired with a Ku trailer, which has a 2.5 meter diameter antenna and transit cases that provide Soldier interfaces to Secure Internet Protocol Router and Non-Secure Internet Protocol Router networks data along with red and black Voice over IP.

Each JNN is also provided with rugged laptop computers for network management and operations. The JNN shelter is located at the Unit of Employment and Unit of Action levels when deployed for operations. Ku trailers are deployed with transit cases at the battalion level. The transit cases are similar to the cases used with the JNN shelter and provide Ku transmission and connection for SIPR and NIPR networks voice and data. The Hub set is located at Corps/Unit of Employment level. It consists of two satellite trucks and a baseband truck.

Wallace said, the other thing that JNN-N does that is important to understand, is that it takes us into the realm of IP-based communications, which is a necessary step toward Warfighter Information Network-Tactical capabilities in the future.

"And, it happens to be the direction that commercial industry is going with regard to communications." Wallace said. "So it keeps us at pace of what is happening in commercial industry. But it also provides us a capability on the battlefield that we otherwise would not have (without) beyond-line-of-sight capability, satellite communications capability and the increased bandwidth that comes along with the JNN terminal that's deployed in the field."

JNN-N's satellite technology allows multiple command posts to be used in separate locations, said former Deputy PdM JNN Robert Wilson. Each command post independently receives communications capability from the satellite, so they don't have to rely on each other to communicate. This allows each Command Post to be individually moved, without disturbing the overall network, he said.

The Connections Pipe for Army Battle Command Systems 6.4

During JNN-N's initial deployment, the 3ID demonstrated how the system can provide direct connectivity to the Global Information Grid and subsequently all of the capabilities within the Army Battle Command Systems. The GIG is a globally interconnected, end-to-end set of information capabilities and processes for collecting, processing, and managing information on demand to Warfighters, policymakers, and support personnel. The connectivity JNN-N demonstrated also increased the Joint Common Operating Picture, reducing the ambiguity and confusion of combat to clearly identify the positions of friendly forces and the known positions of the enemy for improved Situational Awareness, according to recent award submissions.

The 11 components of ABCS 6.4 are:

Force XXI Battle Command, Brigade and Below tracks and displays friendly vehicles and aircraft that appear on a computer screen as blue icons over a topographical map or satellite image of the ground. Force XXI Battle Command, Brigade and Below – Blue Force Tracking uses satellite technology, while the balance of FBCB2 uses terrestrial based tactical radios. Users can manually add red icons that show up as enemy on the screen and are simultaneously broadcasted to all the other FBCB2 users on the battlefield. Other capabilities include creating, sending and displaying

graphics such as bridges, minefields, obstacles, supply points, and other battlefield hazards. Users can also send messages to each other similar to e-mail on the Internet.

The system is "ruggedized" to survive in any known battlefield environment and is used in platforms such as tanks, rotary wing aircraft, HMMWVs and CPs. Its network capability connects all of the FBCB2 users together and tracks the locations of other platforms.

The Battle Command Sustainment and Support System integrates multiple data sources into one program and provides commanders with a visual layout of battlefield logistics.

The system includes an automated view of the battlefield and logistics positioning of supplies. The software of BCS3 can operate on both classified and unclassified networks. It also gives units the opportunity to plan, rehearse and execute a mission on one system.

Maneuver Control Systems distributes tactical information on the battlefield, allowing a Commander to readily access and display current situation reports, intelligence, and contact reports that assess enemy strength and movement, as well as the status of friendly forces.

All Source Analysis System is a tactically deployable, ruggedized, and automated information system that automates the processing and analysis of intelligence data from all sources.

A commander uses the **Advanced Field Artillery Tactical Data System** to plan his fires and to execute his fires during each phase of action whether it is a deliberate attack or defensive operation. AFATDS allows the commander to influence the battlespace with indirect fires; provides a commander with a comprehensive view of the battlefield; and lets a commander plan his attacks based on his scheme of maneuvers with the system.

It allows a commander to change his main fire plan and implement a new plan as a result of activities on the ground. The commander can use the system to give orders; reposition radars and communicate to the lowest levels of units.

The Air and Missile Defense Workstation provides its user with an Air Defense picture and supports the Surface Launched Advanced Medium Range Air-to-Air Missile air defense system by providing an automated defense planning capability for deployed units.

Combat Terrain Information Systems provide commanders with automated terrain analysis, terrain database management, and graphics reproduction.

The Tactical Airspace Integration System is a mobile communications and digitized battlefield automated system for airspace management.

The Global Command and Control System - Army provides a common picture of Army tactical operations to the Joint and Coalition community, while facilitating interoperability of systems with the Army Command.

The Integrated Meteorological System provides commanders at all echelons with an automated weather system to receive, process, and disseminate weather observations, forecasts, and weather and environmental effects decision aids to all Battlefield Operating Systems.

The Integrated System Control provides an automated, theater-wide system that Signal units can use to manage multiple tactical communications systems and networks in support of battlefield operations.

The JNN-N equipment suite is comprised of a shelter mounted on a High Mobility Multi-Wheeled Vehicle, Ku band SATCOM trailers, transit cases and Hub Sets.

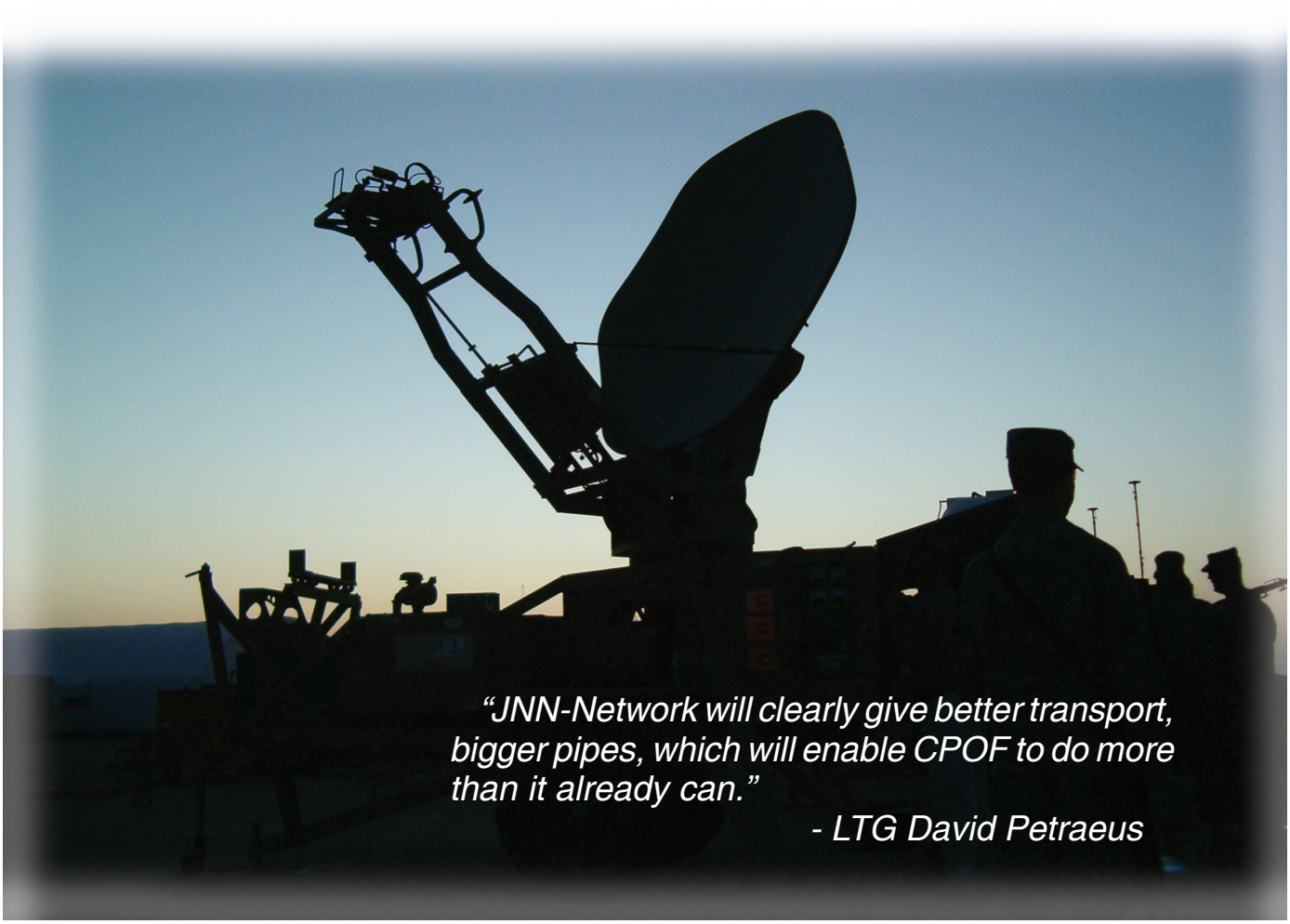
"It (JNN-N) provides a pathway or bridge to the future, which allows the Army today to begin to understand IP-based technology, which is necessary for the ability to fight in the future, because that's the way the technology is moving."

- GEN William S. Wallace

Changing how the Warfighter will fight in the future

The manner in which JNN-N will change how the Army fights in the future, is yet to be fully realized, Wallace said.

"It certainly holds the potential for organizations to be less dependent on fixed site communications," he said. "It has the potential for organizations to operate over a larger area of the battlefield than they otherwise would be able to operate, because of the reduced



distances associated with line-of-sight communications. It provides a pathway or bridge to the future, which allows the Army today to begin to understand IP-based technology, which is necessary for the ability to fight in the future, because that's the way the technology is moving."

Wallace further explains, "It begins to build a cadre of young Soldiers and Soldier technicians who understand IP-based communications, which is dramatically different than the old MSE stuff that we had. And all of that I think is very necessary for the way the Army is going to fight in the future over long distances, large battle spaces, and provide the necessary communications and the kind of bandwidth necessary for those kind of operations."

JNN-N also provides connectivity to the Command Post of the Future.

"JNN-Network and CPOF have enormous potential," said LTG David Petraeus, Commander of Multinational Security Transition Command Iraq. "CPOF has obviously been a huge hit in Iraq starting off initially with the 1st Cavalry Division, the 3ID falling in on it and exploiting it and taking it, if you will, to another level and now watching it expand throughout Multinational Corps Iraq and extending below brigade, level down to the battalion level for Multinational Division Baghdad."

Petraeus is the former commanding general of the 101st Airborne Division (Air Assault).

"JNN-Network will clearly give better transport, bigger pipes, which will enable CPOF to do more than it already can," Petraeus said. "That will enable innovative commanders (and) Soldiers with initiative, to continue to find new ways to use this very powerful application and to exploit the capabilities that it represents."

"CPOF is becoming the collaborative tool of choice for the United States Army and increasingly into the joint arena once people understand its capabilities and the ability to collaborate not only within Army formations but within joint formations," Wallace said. "My own personal judgment is that CPOF, because of its utility, because it has such an intuitive graphic interface with the systems that back it up, that I think maybe CPOF has a role to play in the future as being the graphic user interface for virtually all of our digital communications systems. It seems to me it would be very useful if you had one graphic user interface for all ABCS systems. My judgment is that CPOF or some adaptation of CPOF might be that graphic user interface, so you don't have re-train an ASAS operator, an ABCS operator or anybody that has access to a responsibility for operating our ABCS systems…If they had a common graphic user interface, then we wouldn't have to change techniques from one box to another so that you've got one screen and one

common touch and feel. I think CPOF might be that common touch and feel, regardless of what is beyond the screen itself."

The dedication continues today

Mentzer was quick to point out the dedication of his entire staff, from those who work with its budget to those who develop the system.

"It's the least we can all do for the Warfighter that does so much more for us than we do for them," Sintic said.

"I really think the crux of the matter here is the engineering talent that's resident here," Mentzer said.

The engineers are responsible for ensuring that each new link is updated to include all of the configurations of the present users. This is a significant and new task for the JNN-N engineers, using only allocations of raw Internet addresses, the system engineers construct an entire network for each new division, brigade, and battalion, he said.

"It's more hours than you can imagine and those guys do an amazing job," Mentzer said. "It's all for the Soldier. It enables information sharing on the battlefield."

The Prestige

JNN-Network was a first place winner of an Institute for Defense and Government Advancement 2006 Network Centric Warfare Award under the category of Best Contributions to the Development of NCW Theory on Jan. 18.

"Network Centric Warfare is the embodiment of what we are going through in our Army and modularization," Mentzer said. "It is increasing combat power by getting the digits from all sensors, all viewers, and all fighters, all co-located and shared throughout the entire network. JNN-Network was the recipient of the 2006 Network Centric Warfare Award for bringing that capability forward to the fight and to the Soldiers in the field. We take that network and the capacity to move digits across that network and put it into the tactical environment used by our Soldiers and by our fighting force."

Additionally, JNN-N was recognized as one of the Top Technological Innovations of the Year in the Government/Non-Profit Category World Wide in the Computerworld Honors Program on June 5, 2006. The Computerworld Laureates Class of 2006 was honored during the Medal Ceremonies, which took place at the Andrew W. Mellon Auditorium in Washington, D.C.

Sintic credited the Program Managers, project leaders, budget/system analysts, logisticians, fielders, trainers, testers, industry partners, and contract field support representatives support personnel of PM TRCS with each playing a role that is equally vital to JNN-N's accomplishments.

"No single group or person is responsible for this program's success," Sintic said. "It takes all of these folks working together to make sure our Soldiers have complete programmatic life cycle support."

Josh Davidson of Symbolic Systems, Inc. is a news writer supporting the Program Executive Office, Command, Control, Communications Tactical Chief Information Office in Fort Monmouth, N.J. He holds a Bachelor's Degree in Journalism/Professional Writing from the College of New Jersey (formerly Trenton State College). He previously worked as a municipal beat reporter for the Ocean County Observer, a daily newspaper owned by Gannett Newspapers Inc. He has also written investigative and feature articles for many other publications.

Acronym QuickScan

ABCS – Army Battle Command System
AFATDS – Advanced Field Artillery Tactical Data System
AMDWS – Air and Missile Defense Workstation
ASAS – All Source Analysis System
BCS3 – Battle Command Sustainment and Support System
BCT – Brigade Combat Team
BFT – Blue Force Tracking
BLOS – Beyond Line-of-Sight
BOS – Battlefield Operating System
CE-LCMC – Communications Electronics-Life Cycle Management Command
CPOF – Command Post of the Future
CTIS – Combat Terrain Information Systems
FBCB2-BFT – Force XXI Battle Command, Brigade & Below – Blue Force Tracking
GCCS-A – Global Command and Control System – Army
GIG – Global Information Grid
IDGA – Institute for Defense and Government Advancement
IMETS – Integrated Meteorological System
IP – Internet Protocol
HMMWV– High Mobility Multi-Wheeled Vehicle
ISYSCON – Integrated Systems Control
MCS – Maneuver Control System
MSE – Mobile Subscriber Equipment
NCW – Network Centric Warfare
NIPR – Non-secure Internet Protocol Router
OEF – Operation Enduring Freedom
OIF – Operation Iraqi Freedom
PBX – Private Branch Exchange
PdM JNN-Network – Product Manager Joint Network Node-Network
PEO C3T – Program Executive Office Command Control and Communications Tactical
PEO IEWS – Program Executive Office Intelligence, Electronic Warfare and Sensors
PM TRCS – Project Manager Tactical Radio Communications Systems
SIPR – Secure Internet Protocol Router
SLAMRAAM – Surface Launched Advanced Medium Range Air-to-Air Missile
TAIS – Tactical Airspace Integration Systems
TRADOC – Training and Doctrine Command
VoIP – Voice-over-Internet Protocol
WIN-T – Warfighter Information Network-Tactical

BG Tucker: JNN-N making a contribution to deployed force

By Josh Davidson with interview by David Brackmann

The Army Battle Command and Enablers System of Systems test to support full rate production decisions for the Joint Network Node-Network and Standardized Integrated Command Post System/ Command Post Platform ended in June. Other systems under assessment were Force XXI Battle Command, Brigade and Below-Blue Force Tracking, Command Post of the Future, JNN NetOps Package Five through Seven and the Army Battle Command System of Systems.

The systems are within the Army's Program Executive Office for Command, Control and Communications Tactical. The testing operations took place at Fort Irwin, Calif.; Fort Hood, Texas; Fort Monmouth, N.J.; and Schofield Barracks, Hawaii. BG Christopher Tucker, commander of Operational Test Command, offered his perspective about the JNN-N following one of the test's Battle Update Briefings at Fort Irwin's National Training Center.

BG Christopher Tucker, CG OTC; BG Nickolas Justice, deputy PEO C3T; Robert Golden, former PM TRCS; and LTC Rod Metzer, PdM JNN-N; attend the Battle Update Brief at the ABCESS test held at Fort Irwin, Calif., in June.

How will the Joint Network Node-Network change how the Army fights in the future?

BG Tucker: JNN-N will help the Army's transformation in the future because of its capability of transporting our information over satellite versus what we have traditionally used, which is line-of sight-communications. Having that capability at the brigade level and below, which is what we are seeing here at the Operational Test at the National Training Center, provides a tremendous capability and we believe will greater support the transport of communications in the future.

How are the Soldiers adapting to the new technology?

BG Tucker: The Soldiers that are involved in the Operational Test here at the NTC are very resilient. They're very interested in working with the JNN transport capability system. They have adapted to it very, very well and are working diligently to integrate it into the brigade and battalion (level) communications systems.

What is JNN-N's contribution to Operation Iraqi Freedom and Operation Enduring Freedom?

BG Tucker: As many people know, JNN-N's contribution to OIF and OEF has already begun prior to the start of this test as the Army began fielding that system in late 2003, early 2004. To date, we've had a number of divisions that have deployed with the JNN transport capability system and it is performing for those units and has for probably a year-and-a-half; so it is already making a contribution to our deployed force.

Do you care to comment on the Team C4ISR support during this event?

BG Tucker: I've seen the Team C4ISR support for this particular event come together very well. The Field Service Representatives that are supporting the units both at the battalion and brigade level have been proactive to provide whatever assistance they can to meet the unit's needs to support the respective communications systems that are a part of the brigade and battalion architecture.

Can you talk about the kind of impact the Command Post of the Future has made?

BG Tucker: The CPOF display and product system that has been integrated into the Army Battle Command Systems System of Systems within our respective battalion and brigade Command Post is being used by this unit during the Operational Test. So far, both the battalion and brigade have made extensive use of CPOF capabilities to both present data and to support direct communications within the brigade and within each of the battalions.

Josh Davidson of Symbolic Systems, Inc. is a news writer supporting the Program Executive Office, Command, Control, Communications Tactical Chief Information Office, Fort Monmouth, N.J. He holds a Bachelor's Degree in Journalism/Professional Writing from the College of New Jersey (formerly Trenton State College).

Mr. Brackmann, of Symbolic Systems, Inc. is the multimedia manager of the Strategic Communications and Information Center supporting the PEO C3T Chief Knowledge Office. He is a photographer, video production and graphic design expert with over twenty years of military contracting experience.

Acronym QuickScan

ABC&E SoS – Army Battle Command and Enablers System of Systems test
BUB – Battle Update Briefings
CPOF – Command Post of the Future
FBCB2-BFT – Force XXI Battle Command, Brigade & Below – Blue Force Tracking
FRP – full rate production
FSR – field service representative
JNN-N – Joint Network Node-Network
NTC – National Training Center
OEF – Operation Enduring Freedom
OIF – Operation Iraqi Freedom
OTC – Operational Test Command
PEO C3T – Program Executive Office for Command, Control and Comminications Tactical

JNN – Network selected as:

2006 IDGA Network Centric Warfare Award winner

By Michael J. Golden

The Institute for Defense and Government Advancement selected the Joint Network Node – Network as their 2006 Network Centric Warfare Award winner.

Network Centric Warfare is the embodiment of the information Age into the United States Department of Defense. It involves a new way of thinking that allows the DoD to organize, interrelate, acquire and field its systems in order to better accomplish its missions.

NCW moves the DoD to the next level of jointness as set forth in Joint Vision 2020. It will employ technologies not yet invented and will use ways of operating not yet conceived. NCW will increase warfighting capabilities by orders of magnitude. This view is supported from a wide variety of experiments, exercises, simulations, and analyses detailed in the report, prepared for Congress in response to the provisions of Section 934 of Public Law 106-398.

In addition to theory and laboratory simulation, The U.S. Army has real, battlefield-tested data supporting the worth of transforming today's platform-centric force into a Network-Centric one. The Army has conceived of, designed, and managed the Joint Network Node-Network in Fort Monmouth, N.J.

The JNN-N is based on a satellite mesh networking, employing an interoperable series of redundant links which enables modular jump split operation. Its modular centric design and operation allows Combatant Commands to choose whatever assets available to be readily configured within the network. It is the real-life, fielded, embodiment of Network Centric Warfare.

JNN generates increased combat power by providing high bandwidth, integrated satellite and beyond line-of-sight communications network down to a level of connectivity that has never before been achieved in any service. Serving as the Internet Service Provider to the Warfighter, the JNN-N is the state-of-the-art communications backbone supporting Command, Control, Communications, and Computers, Intelligence, Surveillance, and Reconnaissance systems.

The tenets of NCW dictate a robustly networked force that will benefit from improved information sharing. Information sharing and collaboration enhances the quality

of information and shared situational awareness. Shared SA enables collaboration and self synchronization, enhances sustainability and speed of command, as well as execution. These in turn dramatically increase mission effectiveness. The JNN-N meets all of these tenets.

In August 2004, the 3rd Infantry Division was the first unit to deploy to Iraq with JNN. During this deployment, 3ID demonstrated the ability of the JNN-N to provide direct connectivity to the Global Information Grid and subsequently all of the capabilities within the Army Battle Command Systems. This connectivity also increased the Joint Common Operating Picture, reducing the ambiguity and confusion of combat to clearly identify the positions of friendly forces and the known positions of the enemy for improved SA.

JNN-N's state-of-the-art internet hardware and software provide the high bandwidth performance that increases the speed of command. Information superiority is achieved by the network's ability to assimilate data and share information within one second.

"The application of net-centric principles will accelerate the decision cycle by linking sensors, communications networks, and weapons systems via an interconnected grid, thereby enhancing our ability to achieve information and decision superiority over an adversary during the conduct of military operations." [1]

In addition to the 3ID, the JNN-N has been fielded to the 101st Airborne Division; 10th Mountain Division; 4th Infantry Division; 1st Calvary Division and the 25th Infantry Division, in support of their Operation Enduring Freedom/ Operation Iraqi Freedom rotations. Documented interviews conducted by Army Test and Evaluation Command of members from the 3ID, 101ABN and 10MTN clearly indicate that the JNN-N is providing unprecedented connectivity from Home Station Operations Centers to forward deployed elements of the division, and providing vast improvements in battle command interoperability and situational awareness. Soon, the entire Army will have JNN capability.

The JNN-N components were purchased, integrated, and issued to the 3ID, the initial deployed JNN unit, in less than 180 days of release of Headquarters Department of the Army allocated funding. A feat originally declared "impossible" by HQDA G-8 leadership, the very same HQDA G-8 senior leader later called delivery of the JNN-N systems to 3ID "an acquisition miracle."

Developed in conjunction with Headquarters Department of the Army, Signal Center Directorate of Combat Developments and the Combined Arms Center, Fort Leavenworth, the JNN-N components were purchased, integrated, and issued to the 3ID, the initial deployed JNN unit, in less than 180 days of release of Headquarters Department of the Army allocated funding. A feat originally declared "impossible" by HQDA G-8 leadership, the very same HQDA G-8 senior leader later called delivery of the JNN-N systems to 3ID "an acquisition miracle."

The totality of Army internet based battlefield management and command and control systems, are being individually connected to the JNN-N, through the COTS connectors to both NIPR and SIPR networks at all echelons of command. These connections allow the Army and other users it supports, to leave stovepipe networks and systems, and join the JNN-N, as a tactical extension of the Defense Information Systems Network.

The JNN-N was developed as a commercial Internet Service Provider, packaged in tactical shelters and user transit cases. Throughout its design, it takes advantage of state-of-the-art networking technologies such as: routers, switches, firewalls, and software management/Information Assurance tools. It has the ability to share encrypted data and Voice over Internet Protocol capabilities, to the new modular brigade sized units. Bandwidth is also shared through a TDMA architecture, to battalion level units, with a typical throughput in operational constructs.

The JNN-N connects from a Standard Tactical Entry Point/ Teleport/Global Information Grid - Bandwidth Extension/Army Directorate of Information Management, through a commercial Ku satellite link to a maximum brigade-sized elements on the battlefield, using a network component simply called the Hub. The Hub has two satellite dishes, each capable of shared Time Division Multiple Access and FDMA connectivity. Currently, a division is allocated a Hub, with redundant electronics, which approaches that of a strategic terminal. To further support this tactical mobile Hub, the Army is making significant technical investments in fixed satellite gateways locations, to support the growing use of JNN base communications.

JNN-N brigade and battalion satellite elements use trailer mounted, self powered, Ku satellite dishes, which self erect and auto-acquire a commercial Ku satellite from a worldwide database contained in the antenna controller. Connections between all satellite trailers, JNN shelters, and battalion transit cases are via tactical fiber optic cable. Individual trailers are capable of burst rates greater than four megabytes, but are linked together through the TDMA structure of the network for "on demand" bandwidth adjustments. Hubs and JNN brigade level shelters are each capable of providing the TDMA

Pictured, in alphabetical order, are team members of Product Manager Joint Network Node - Network after receiving the IDGA NCW Award for Best Contributions to the Development of Network Centric Warfare Theory: Bill Blair, Dave Buleza, Chad Claussen, Tara Corbo, Kathy Fishman, Michael Golden, Mike Hedley, Peter Johnson, Kavita Joshi, Judy Marcinkiewicz, Paul McCabe, Cesar Mencia, LTC Rod Mentzer, Raj Parikh, Rob Pitsko, John Shotwell, Jim Sintic, MAJ BJ Stephens, Gary Vittorini, Bob Wilson, Jennifer Zbozny, and Drew Zovak.

master reference frame, to permit deployment of a single JNN and its battalion level complement equipment, with no sanctuary Hub. In these cases, existing wideband military satellite communication terminals such as the TSC-85/93 and Secure Mobile Anti-jam Remote Terminal-Tactical can be used to connect the deployed JNN components to the DISN or the JNN can make a direct connection to the GIG.

JNN S-250 shelters, have borrowed from their Mobile Subscriber Equipment predecessors, connectivity using line-of-sight radios, such as the GRC-226 and GRC-245, with connectivity on a peer-to-peer basis. Additionally, JNN brigade level shelters are capable of connecting to battalion level systems, when LOS distances are possible.

The JNN-N is designed in conjunction with Central Command to allow direct connectivity with Combined Enterprise Regional Information Exchange coalition networks in theater.

Using NSA approved Tactical Local Area Network devices for end-to-end encryption; the system was designed to allow the network to host a Joint Command Post from the onset. In addition to its organic Ku satellite connectivity, these GIG-Bandwidth Expansion connections can further be extended to other services and federal agencies, using military SATCOM terminals such as TSC-85/93, SMART-T, and high bandwidth International Marine/Maritime Satellite connections. Any transport media that can be engineered to transport Transmission Control Protocol/Internet Protocol packets, can be used to extend JNN-N connections.

JNN is a transport network and at its terminus are standard commercial connectors, for VoIP and any user Internet based application. The Army CIO/G-6 has expanded the JNN-N, calling it the Joint Network Transport Capability-Spiraled. In this regard, JNN-N is the equipment, and JNTC-S is the capability the network brings to the tactical user, with the embedded capabilities of both base network and user applications.

The JNN-N is continually evolving using the spiral development concept. Technology enhancements will be inserted with each fielding of JNN-N components to Army Division sized units as they are being modularized and prepared for OIF rotations.

SATCOM connectivity from tactical platforms, as the capabilities of the JNN-N and the future WIN-T network are blended to one common network solution.

The JNN-N began as one of the solutions developed to answer a challenge to Army Research Development Test and Evaluation and Acquisition Officials, to find commercial technology capabilities available today, and incorporate these capabilities into today's forces. The Chief of Staff, of the Army himself, issued this challenge to the communities at the beginning of 2004.

The JNN-N development was regularly overseen by U.S. Army Council of Colonels and General Officer Steering Committee functions. Ultimately, its execution was approved by the Vice Chief of Staff of the Army, under the "Bridge to Future Networks" concept.

The JNN-N is being integrated by Army Project Manager Tactical Radio and Communications Systems, Fort Monmouth, N.J. Project Manager Tactical Radio Communi-

cations Systems has selected General Dynamics as the provider of shelters, transit cases, and commercial-off-the-shelf/government-off-the-shelf components into the various network echelons. PM TRCS has partnered with PM Warfighter Information Network-Tactical for the selection and providing of Ku satellite components for both the tactical trailers and the network Hubs. The PM WIN-T Commercial Satellite Terminals Program has selected DataPath Corporation to supply the commercial Ku satellite components of the network.

System Engineering is accomplished through a team of PdM JNN; Army RDT&E; Systems Engineering Technical Assistance; Federally Funded Research and Development Center; and Industry engineers. The effort and group has truly become one unit, intent on accomplishment of the system integration and satisfaction of the commanders of the various warfighter units.

PM TRCS consults with Central Command, regarding requirements for coalition connectivity using their standard (Combined Enterprise Regional Information Exchange) for coalition partners in theater, and has provided technical details of the JNN-N to all Services in various Joint Forums. The United States Marine Corps purchased five JNN-N Ku band satellite communication trailers, also known as Satellite Transportable Terminals for their OIF urgent needs requirement. The USMC included the JNN-N STT in their Secure Wide Area Network program of record submission. Based on independent joint interoperability exercises between the Army and Marine Corps, the USMC has stationed MAJ Peterman, USMC, as the Marine Corps Liaison Officer at Fort Monmouth to support the effort to converge the USA and USMC networks into one interoperable network. The USMC plans to purchase an additional 155 JNN STTs for integration into their network architecture.

Several JNN-N STTs were deployed to support the Federal Emergency Management Agency, The Department of Homeland Security, and U.S. Army NORTHCOM 2005 Hurricane relief efforts to restore communications in the areas that were affected by Hurricane Katrina. The STTs were staged on an emergent basis and shipped directly from the JNN Industry partner, DataPath, Inc. to the affected areas. The integration of STTs and other select JNN communication Network components provided the broadband satellite communication capabilities.

The JNN-N supports the development of network-centric warfare theory and strategy because it is the real-life, fielded, embodiment of Network Centric Warfare. JNN is proving itself to be a key enabler of Network Centric Operations. NCO is the NCW theory, put into action.

JNN allows the forces of today and the future to shift away from the platform centric environment that lacked the ability to leverage the synergies created through a networked force. "A force implementing NCW is more adaptive, ready to respond to uncertainty in the very dynamic environment of the future at all levels of warfare and across the range of military operations. When we consider the most recent combat experience of U.S. forces in Afghanistan and Iraq, it is apparent that platforms retained a central focus, but the networking of those platforms and organizations greatly enhanced their lethality and survivability." [2]

The JNN-N is a key enabler for Network Centric Warfare and as such provides a "proof of concept," validating how NCW theories are a driving force towards successful joint tactical operations in the Information Age. This real world example demonstrates that the ability to share information gives commanders increased combat power by providing greater situational awareness and ensuring lethality and survivability.

The JNN-N is a key enabler for Network Centric Warfare and as such provides a "proof of concept," validating how NCW theories are a driving force towards successful joint tactical operations in the Information Age. This real world example demonstrates that the ability to share information gives commanders increased combat power by providing greater situational awareness and ensuring lethality and survivability.

Product Manager-JNN educates the Warfighter with state-of-the-art, NCW technology prior to deployment with JNN systems. On a unit by unit basis, we are continually replacing mobile subscriber equipment with network centric JNN-N. As the JNN team completes the development and testing of new technologies, equipment and capabilities within each subsequent JNN spiral, these evolving NCW technologies are then retrofitted back to earlier deployed units. Each Warfighter in these receiving units continue to be educated in the latest NCW technologies and theories.

Michael J. Golden of Scientific Research Corporation supports Product Manager, Joint Network Node as a System Engineer. He has 22 years experience as an Integrated Circuit Designer, Development Engineer, and Program Manager with AT&T Bell Laboratories/Lucent Technologies. He holds Bachelor of Science degree from the Pennsylvania State University and Masters Degrees in Electrical Engineering and Business Management from Lehigh University and from George Washington University, respectively.

He holds the U.S. patent for emergency locate Time Division Multiple Access based wireless systems (cellular emergency 9-1-1).

END NOTES:

1 The Implementation of Network-Centric Warfare, Director, Force Transformation, Office of the Secretary of Defense, pg.18

2 The Implementation of Network-Centric Warfare, Director, Force Transformation, Office of the Secretary of Defense, pg. 19

Acronym QuickScan

1CAV – 1st Calvary Division
3ID – 3rd Infantry Division
4ID – 4th Infantry Division
10MTN – 10th Mountain Division
25ID – 25th Infantry Division
101ABN – 101st Airborne Division
ABCS – Army Battle Command Systems
ATEC – Army Test and Evaluation Command
C4ISR – Command, Control, Communications, and Computers, Intelligence, Surveillance, and Reconnaissance
CAC – Combined Arms Center
CENTCOM – Central Command
CENTRIX – Combined Enterprise Regional Information Exchange System
CIO/G6 – Chief Information Office
CoC – Council of Colonels
COCOM – Combatant Command
COP – Common Operating Picture
COTS – commercial-off-the-shelf
CSTP – Commercial Satellite Terminals Program
DCD – Directorate of Combat Development
DISN – Defense Information Systems Network
DoD – Department of Defense
DOIM – Directorate of Information Management
FDMA – Frequency Division Multiple Access
FEMA – Federal Emergency Management Agency
FFRDC – Federally Funded Research and Development Center
GIG – Global Information Grid
GIG-BE – Global Information Grid-Bandwidth Expansion
GOSC – General Officer Steering Committee
GOTS – government-off-the-shelf
HQDA – Headquarters Department of the Army
HSOC – Home Station Operation Center
IDGA – Institute for Defense & Government Advancement
INMARSAT – International Marine/Maritime Satellite
ISP – Internet Service Provider
JNN – Joint Network Node
JNTC-S – Joint Network Transport Capability-Spiral
LOS – Line-of-Sight
MB – megabyte
MSE – Mobile Subscriber Equipment
NCO – Network Centric Operations
NCW – Network Centric Warfare
NSA – National Security Agency
NIPR – Nonsecure Internet Protocol Router
OIF – Operation Iraqi Freedom
PdM – Product Manager
PM TRCS – Project Manager, Tactical Radio Communications Systems
RDT&E – Research Development Test & Evaluation
SA – situational awareness
SATCOM – Satellite Communications
SE/TA – Systems Engineering Technical Assistance
SIPR – Secure Internet Protocol Router
SMART-T – Secure Mobile Anti-jam Remote Terminal – Tactical
STEP – Standard Tactical Entry Point
STT – Satellite Transportable Terminal
SWAN – Secure Wide Area Network
TACLANE – Tactical Local Area Network
TCP/IP – Transmission Control Protocol/Internet Protocol
TDMA – Time Division Multiple Access
TS/SCI – Top Secret/Special Compartmentalized Information
VoIP - Voice over Internet Protocol
WIN-T – Warfighter Information Network – Tactical
USMC – United States Marine Corps

Signal Center offers hands-on learning of systems like JNN-Network

By Josh Davidson

BG Ronald Bouchard recently illustrated the importance of hands-on training by comparing how he learns to use a DVD player; to his son's method for accomplishing the same task.

Bouchard said he learns to use the product by taking it out and reading the directions. His son, however, throws the directions aside and learns to use it on his own.

As simple as it may sound, this example also shows how training methods are changing throughout the Army and its Signal Center, in Fort Gordon, Ga., to accommodate today's generation of computer savvy Soldiers.

The LandWarNetwork-University was established at the Signal Center in February to further efforts to train Soldiers to operate mobile Internet Protocol networks. The Army earmarked $30 million to fund the LWN-U in order to update its training infrastructure and organization at the Signal Center.

The term LandWarNet refers to the Army's portion of the Global Information Grid. The GIG is a globally interconnected, end-to-end set of information capabilities and processes for collecting, processing, and managing information on demand to Warfighters, policymakers, and support personnel.

The concept of the LWN-U is to train and educate Soldiers better by synchronizing the Army's Schools and Centers, Battle Command Training Centers, and Centralized Training Support Facilities. A LWN-U objective is to change how Signal Soldiers are trained and updated in the skills for their Military Occupational Specialty. The LWN-U focuses on establishing a mindset where Soldiers think about the manner in which the Army works with other services in the realm of Joint Task Forces.

LWN trains Soldiers to operate mobile Internet Protocol networks such as the Joint Network Node-Network. The Signal Center partnered with General Dynamics to develop or modify 20 courses on the system and purchase training aides, Bouchard said. Still, 21 additional courses need to be developed or modified, he said.

Students begin their training at the General Dynamics JNN-N school by becoming familiar with the system's router.

Delda Rhoades, training manager at the Signal Center recently gave a tour of the school.

Each classroom is connected to a patch panel that provides access to all of the JNN-N equipment used during the training, she said. Many of the school's JNN-N are set up in open racks.

As they train on the JNN-N, Soldiers learn from various perspectives that will be beneficial when they use other systems, Rhoades said. Each class includes about 20 students. Many of the students receive their materials, such as technical manuals, on compact disc, she said.

"Hands-on training is the best way for Soldiers to learn a piece of equipment and a compliment to the lectures they receive," said MSG Stephon M. Sterns, the non-commissioned officer-in-charge of the JNN/LWN-U Cell. Sterns estimates that about 50 to 75 percent of each JNN-N course, taught by General Dynamics, is comprised of hands-on learning. The percentage is lower than if there were more training resources.

"In a normal class, it is set up to provide the student information on the topic or piece of equipment being discussed," Sterns said. "Following the classroom portion of the class, there is a hands-on portion as appropriate. There will be a slide show and then the majority of the class will be hands-

Hands-on training is offered to Signal students. Hands-on is the best way for students to learn and enhances what lecturers they receive, according to MSG Stephon M. Sterns, NCO in charge of JNN/LWN-U cell.

on. There are cases where the class is completely hands-on. Because much of the equipment we work on is either so complicated or so expensive, there is usually some explanation of the equipment prior to the hands-on portion of the class. There is no standard for how much lecture and how much hands-on is appropriate. Much of it depends on the topic and sometimes the size of the class plays a role."

At the General Dynamics JNN-N school, students learn to troubleshoot through the actual network problems which arise during their training, Rhodes said.

Even though the simulations are based on equipment from Spiral One of the JNN-Network, "We try to push the concept: if you understand one (version), you should understand the other," Rhoades said.

Simulators are used to lessen the amount of equipment needed for each student, Bouchard said. Using simulators saves the Army money by reducing the amount of time that a Soldier has to touch physical equipment, he said.

The Signal Center is looking at the possibility of using multi-player and geographically dispersed gaming as a training tool for systems like JNN-N, Bouchard said. During the game, the user could learn by playing their actual role as a Soldier, he said.

Today's Soldiers are used to computer gaming. "That's why it is important to get (Soldiers) the simulators and the equipment for them to train with," said Bouchard.

The Signal Center now provides a LWN eUniversity portal (LWN.army.mil) that can be accessed through Army Knowledge Online. Web-based training enables Soldiers to learn from remote locations.

The eUniversity is a new version of the Signal Center's Lifelong Learning Training portal. The version's look and feel have been expanded to encompass the five goals of the LandWarNet initiative which are training and educating Soldiers on LWN; developing and educating Leaders on LWN; providing LWN education for Lifelong Learning; providing LWN training to support the Warfighter and integrating Combat Development and research in training and education.

The eUniversity contains a number of computer accessible applications that a Soldier can pull from any location, Bouchard said.

The e-University came about when Bouchard first came to the Signal Center, said Michael Bowie, Chief of the Fort Gordon Lifelong Learning Center. Bouchard recognized a need for a place where Soldiers, leaders, and civilians could go to for network training, Bowie said.

Though systems are available, there was no "one-stop shop" for information on them, he said. The e-University was created in April and is now authenticated through the Army Knowledge On-Line, he said.

The site is a Knowledge Management Network accessible through the AKO homepage. The e-University's homepage contains information on the three major parts of LandWarNet: Applications, Services, and Network Transport or "the three legs that support LandWarNet," according to SGM Edgardo Ramirez, Directorate of Training Sergeant Major at the Signal Center.

Training can be hosted on the portal itself or at remote locations. It also contains links to other useful portals. The portal's LandWarNet Command and Control Applications section includes an Army Command Systems Leader's Guide; Command and Control System training information and a Force XXI Battle Command, Brigade and Below simulation.

The portal offers training in Information Assurance, Promina systems and radios.

A JNN-N training section offers a virtual, personal computer-based equipment simulator of the JNN shelter with Brigade Transit cases.

"We're real proud of our achievements to date," Bouchard said. "We're really happy with the relationship we have between the School House and Product Manager JNN-Network."

At the JNN School, courses are taught on subjects such as High Capacity Line-of-Sight Radios and Ku Band Satellite Terminals.

Other areas of the school include the Tactical Unit Hub Node area, Battalion Command Post Node area, Server Call Manager Lab and six multimedia classrooms. The school is in the process of standing up a Warrant Officer Classroom with all of the equipment in one room, Rhodes said.

JNN-N training offered at the school includes Advanced non-commissioned officer courses; Basic Non-Commissioned Officer courses; Advanced Individual Training courses; Basic Officer Leader Courses; Signal Officer Branch Qualification courses; Warrant Officer Basic courses, Warrant Officer Advanced Courses; G6/S6 level courses; and the JNN Leader's Course.

Josh Davidson of Symbolic Systems, Inc. is a news writer supporting the Program Executive Office, Command, Control, Communications Tactical Chief Information Office in Fort Monmouth, N.J. He holds a Bachelor's Degree in Journalism/Professional Writing from the College of New Jersey (formerly Trenton State College). He previously worked as a municipal beat reporter for the Ocean County Observer, a daily newspaper owned by Gannett Newspapers Inc. He has also written investigative and feature articles for many other publications.

Acronym QuickScan

AKO – Army Knowledge Online (www.us.army.mil)
FBCB2 – Force XXI Battle Command, Brigade & Below
GIG – Global Information Grid
HCLOS – High Capacity Line of Sight
JNN-N – Joint Network Node-Network
LWN-U – LandWarNet University
MOS – military occupational specialty
NCOIC – non-commissioned officer-in-charge
TAC – Tactical Command

Current Force Network IPT involves 'Everybody'

By Josh Davidson

In the Army's Program Executive Office for Command, Control, and Communications-Tactical, Integrated Product Teams play a major role in reducing redundancies on the network where its systems reside.

Presently, the Current Force Network IPT is examining how to remove some of those redundancies among the systems which exist on the Joint Network Node-Network. The IPT is chaired by Project Manager Tactical Radio Communications Systems and is comprised of representatives from the Chief Information Office/G6; Fort Gordon Battle Labs and Signal Center; the Central Technical Support Facility and Communications-Electronics Command Sofware Engineering Center. PEO C3T is represented by their System Engineering and Integration; PM TRCS [consisting of JNN-N, Command Post Platform/Mounted Battle Command on-the-Move, Warfighter Communications Solutions]; along with Product Manager Army Airborne Command and Control System; Project Manager Warfighter Information Network-Tactical Commercial Satellite Communications Terminal Program and the PEO C3T North East Regional Response Center/Special Projects Office. The Communications-Electronics Research and Develoment Engineering Center is represented by their Space and Terrestrial Communications Directorate, Software Engineering Directorate and Command and Control Directorate. Other participants include: General Dynamics Command, Control, Communications, and Computers Systems; Data Path Inc.; MITRE; and Norhtrop Grumman Military Systems.

The PEO C3T provides the Warfighter with numerous digital systems, many which were developed by separate Project Managers. Each of the systems were built with different vehicles, shelters, networking equipment, wiring harnesses, and patch panels. Products built with various types of networking gear can create interoperability issues. So, the Current Force Network IPT is working to organize each aspect of the PEO C3T's individual systems by function and to develop common elements among the products. The goal is to create systems which interoperate as one single network entity, known as a System of Systems.

"We want to take all the systems and make them work together as one single enterprise network or Systems of Systems," said James Sintic, chief engineer for Tactical Networking Systems with PM TRCS. "What we're trying to do is remove those stovepipes from the Army enterprise network while providing enhanced capabilities. From a mechanical engineering perspective, we want to ensure that a Soldier can sit inside any PEO C3T communications system and know that each system was designed exactly the same way but with scaled capability sets built for that particular systems function in the Systems Architecture. Whether a Soldier sits inside a JNN-N, CPP, or a WIN-T Point of Presence, the shelters should have the same physical interfaces, networking gear, and rack layouts. This will greatly reduce the logistics and training burden on our Soldiers."

Sintic went on to say that for many years, the programs created within the Army's tactical community have had their own separate requirements and have functioned somewhat independently from one another. This has led to redundant requirements and tactical communication systems that worked liked "stove-pipe" or independent systems within the rest of the Army Tactical Systems Architectures.

That factor has resulted in a network that operates with a great deal of redundancy and a group of independent systems that require the Army to maintain separate equipment, training, logistics, and many extra contract field support representatives, Sintic said.

To resolve some of those issues, the PEO C3T's leadership released its Fragmentary Order 8 in February.

FRAGO 8 establishes a System of Systems or "an enterprise architecture of capability sets," said Jennifer Zbozny, PM TRCS Technical Management Division chief.

"FRAGO 8 is like building a corporation within the PEO – making it run more efficiently," Sintic said.

Following the recent PEO C3T re-organization, BG Nick Justice, deputy PEO C3T and Chuck Pizzutelli, director of the PEO C3T's SE&I office, developed a series of SoS engineering and integration approaches, processes, and IPTs as solutions to the PEO C3T's system and SoS issues. Among the original 19 work items were: bandwidth characterization and measurement; wiring harness common product line; product line architecture; software quality improvement; and Tactical Operations Center physical layout. Eventually, 10 more work items were added including a Systems Engineering training IPT, common platforms and common modules.

The Current Force Network IPT has made great strides toward reducing redundancy within the network from a network communications perspective, Sintic said.

Dale White, Shawn White, Barry Kruse, and Joe Vano of Fort Gordon's Network Service Center-Training provide the Current Force IPT with a great deal of support, Sintic said.

"It [the Current Force IPT] has created a forum for a number of parties to interact, so that there are no stovepipe solutions," said Robert Shields, branch chief, Network Product Execution . The Current Force Network IPT was formerly called the Systems Engineering IPT.

When looking at separate systems, the IPT noticed many interoperability issues and decided to be the overarching group to determine them, Sintic said. The team realized it had to ensure that each application participating through the JNN-N is interoperating properly. It determined that a group of stovepiped systems was not sensible and that a single system was necessary, Sintic said.

Presently, one major focus of the IPT is to develop network requirements for all of the Army Battle Command Systems, said Matthew Iannelli, Current Force Network IPT chairman. The team is working to build a Battle Command requirements matrix for the JNN-N, so when Battle Command systems are deployed and used over the network, it performs to meet those requirements. The IPT is also looking at the entire network enterprise to ensure that it performs up to expectations, he said.

The products presently delivered to the Warfighter sometimes contain equipment that is located in different areas of a shelter or vehicle. Soldier training becomes a challenge when, for example, a system's interfaces and user access ports are located in completely different locations or if different network packages are fielded that provide the same capability. The FRAGO 8 process will improve training in those types of areas, Zbozny said.

The IPT has made life easier for the Soldier in the field by standardized training and technical manuals for different items. Standardization has eliminated the need for that Soldier to re-learn software, Sintic said.

Providing a common enterprise architecture will reduce the training burden for the Warfighter. It will also reduce the number of Soldiers required to run the technology. This will allow them to focus more on the traditional roles of a Warfighter, Sintic said.

In the case of the JNN-N, what used to require multiple transit cases can now be accomplished with just one. A common platform solution allows one transit case for different applications, Sintic said.

The IPT has reduced the number of routers needed on the Wide-Area Network, which in turn means less routers to troubleshoot, Iannelli said.

The FRAGO 8 process has numerous advantages, such as reducing Soldier training and saving money in many areas within each program, Sintic said. The large amount of money that FRAGO 8 will save can be used to fill technology gaps found in the PEO's systems to fill the needs of the Army's modular modernization efforts, he said.

The IPT's work affects the entire suite of PEO C3T systems, Sintic said.

"I think it affects every system as whole because everybody is a critical part in the overall System of Systems," he said. "The one thing people have to understand about the Current Force Network IPT is that all the programs are a part of the IPT - **everybody.**"

Josh Davidson of Symbolic Systems, Inc. is a news writer supporting the Program Executive Office, Command, Control, Communications Tactical Chief Information Office in Fort Monmouth, N.J. He holds a Bachelor's Degree in Journalism/Professional Writing from the College of New Jersey (formerly Trenton State College). He previously worked as a municipal beat reporter for the Ocean County Observer, a daily newspaper owned by Gannett Newspapers Inc. He has also written investigative and feature articles for many other publications.

Acronym QuickScan

A2C2S – Army Airborne Command and Control System
ABCS – Army Battle Command Systems
C2D – Command and Control Directorate
CECOM – Communications Electronics Command
CERDEC – Communications-Electronics Research Development Engineering Center
CFSR – Contract Field Support Representatives
CIO G6 – Chief Information Office/ G6
CPP – Command Post Platform
CSTP – Commercial SATCOM Terminal Program
CTSF – Central Technical Support Facility
DPI – Data Path Inc.
FRAGO – Fragmentary Order
GDC4S – General Dynamics Command Control Communications and Computer Systems
IPT – Integrated Product Team
JNN-N – Joint Network Node-Network
MBCOTM – Mounted Battle Command on-the-Move
NRRC – Northeast Regional Response Center
NGMS – Northrop Grumman Mission Systems
NSC-T – Network Service Center - Training
PEO C3T – Program Executive Office, Command, Control, Communications, Tactical
PEO SE&I – PEO C3T's Systems Engineering and Integration office
PM TRCS – Project Manager, Tactical Radio Communications Systems
PM WIN-T (CSTP) – Project Manager Warfighter Information Network - Tactical (Commercial SATCOM Terminal Program)
PoP – Point of Presence
SA – Systems Architecture
SEC – Software Engineering Center
SED – Systems Engineering Directorate
SoS – System of Systems
S&TCD – Space and Terrestrial Communications Directorate
TOC – Tactical Operations Center
WAN – Wide Area Network
WARCOMS – Warfighter Communications Solutions
WIN-T – Warfighter Information Network-Tactical

NetOps evolves from staff, Warfighter, Signal Center support

By Josh Davidson

The transformation of Network Operations to its most recent suite involved a careful process, which included feedback from the system's staff, the Soldiers who used it and ultimately the United States Army Signal Center.

The package, called JNN NetOps 5-7, underwent further testing during the Army Battle Command & Enabler System of Systems test, which was held at Fort Irwin, Calif.; Fort Hood, Texas; Fort Monmouth, N.J., and Schofield Barracks, Hawaii, from May 22 to June 10, 2006.

NetOps is used to maintain and troubleshoot the Army's Joint Network Node-Network. JNN-N is a converged tactical communications network providing voice, data and video capability to connect the battalion level Warfighter to areas throughout the world at the quick halt. It's the only network that brings Internet capabilities to the battlefield.

NetOps is used for configuration, along with determining network device fault status and performance link status mainly in terms of bandwidth, said Paul McCabe, lead engineer for JNN NetOps. JNN NetOps 5-7 was a reaction to the feedback of the 10th Mountain Division, 4th Infantry Division and 101st Airborne Division, he said. The systems' predecessor, JNN NetOps 2-4 was fielded to each of those divisions, whose Soldiers developed ideas of what would be needed in an upgrade, he said. The Signal Center made the final determination of which capabilities were necessary for JNN NetOps 5-7, he said.

Normally, it is the Signal Center's role to document a unit's concerns about a system and turn them into cohesive requirements, McCabe said. The Signal Center also supplies a Product Manager with recommendations based on user feedback, he said.

"They are the voice of the Soldier ultimately in terms of what should be fielded," he said.

In the case of upgrading to JNN NetOps 5-7, the Signal Center determined that it was most necessary to add network configuration management, help desk and trouble ticketing capabilities, he said. Desktop remediation such as patch management and anti-virus features were also included.

"We (NetOps) did an evaluation of commercial products, basically compared them to the requirements the Signal Center generated and developed a solution that best fit our needs," he said.

The NetOps staff also took an active role in working with users during the upgrade. After the NetOps 2-4 fielding, its staff went to the field to obtain feedback and interact with users, he said.

"It's what we called 'over-the-shoulder' training," McCabe said. "We interacted with the Division, brigade and sometimes the battalion users and, of course, the Signal Center was there, as well."

As software development continued, Signal Center personnel appeared at many of the events that the NetOps staff attended, he said.

The Signal Center was effective in taking feedback and putting together a "gap analysis" between JNN NetOps 2-4 and JNN NetOps 5-7, he said.

Since the request of one specific unit might not be something that all 10 Divisions need, the Signal Center decides what is needed by the entire Army, he said.

The ultimate objective of the NetOps cell is to ensure users are getting what they need from the network, he said.

NetOps provides its userS with tools to quickly restore their connection to the network. For example, the system has the capability to save network device configurations. Should the network fail, its user can compare the configurations of the functioning and non-functioning server and find out who made the change which caused it to fail, McCabe said. The user can also re-establish the saved configuration of the functioning server for the network.

"The fact that NetOps is a collection of tools, brings forth some challenges to its user," McCabe said. "Because it's a collection of tools, the extent to how successful we are depends on how well the users are trained."

NetOps is provided to Soldiers at the division, brigade and battalion levels. Soldiers at separate levels have different skill sets, he said. However, the network management tools they use, must be the same in order to incorporate modularity.

In the future, the goal will not be to add many more tools to the present NetOps. Instead, it will be to utilize more of the capabilities of the NetOps tools that already exist, McCabe said.

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Acronym QuickScan

ABC&E SoS – Army Battle Command and Enabler System of Sytems
ABCESS – Army Battle Command & Enabler System of Systems
JNN-Network – Joint Network Node-Network
NetOps – Network Operations

SEC provides tools to maintain JNN-N

By Josh Davidson

Maintaining the Joint Network Node-Network requires continued support from the Software Engineering Center.

Headquartered at Fort Monmouth, N.J., the SEC provides a laboratory, staff and a Communications Support Center used for the Post-Deployment Software Support and Post-Production Software Support of the JNN-N.

"The SEC has been involved with and has supported JNN from the very beginning," said Andrew Zovak, PdM JNN-N System Engineering Integrated Product Team Support and Configuration Management Manager.

The Software Engineering Center's PDSS/PPSS staff troubleshoots any issues that come in from the field using its own laboratory and Communications Support Center, and implements feedback from a Software Configuration Control Board.

A SEC laboratory at Fort Monmouth allows for the examination of software issues that are reported from units, said Ekta Parikh, Software Support Lead for Product Manager JNN-N and the SEC. The lab includes a JNN-N shelter and Command Post Nodes, which simulate a field environment.

Technicians can hook up the JNN-N in the lab to a deployed network and see an exact replication of what the user is seeing in the field, Parikh stated.

The lab was also used during the Joint Users Interoperability Communications Exercise 2006 at Fort Monmouth. It will be used to test the Army Battle Command Systems 6.4 suite later this year and is used for testing in conjunction with the Central Test and Support Facility at Fort Hood, Texas. The existence of the lab will also facilitate future participation in JUICE as well as DoD Interoperability Communications Exercise testing.

Another tool used for JNN-N software support is the Communications Support Center. This support center allows users to report issues from the field and gives them the ability to reach back to Project Manager Tactical Radio Communications Systems and SEC headquarters, Parikh said. Through the Communications Support Center, PM TRCS and SEC staff will get an e-mail indicating that a Field Incident Report has been submitted. The staff member can then e-mail a response directly to the user, she said. A FIR repository is also available where users can look at past FIRs and find out if a solution to their problem has already been posted, she said.

"We always make sure that we get back to the user in some way or form," Parikh said.

The Communications Support Center also contains a document management system and a file transfer functionality for large files, which can't be sent through e-mail, she said. Additionally, the center can be used to download urgent releases.

SCCBs are used to manage the different JNN-N releases, Parikh said. This allows the PDSS/PPSS staff to reach out to the Project Manager, SE IPT and all other community members and contractors to ensure their efforts are synchronized, she said.

"Basically, we get everyone on the same page," Parikh said. "We make sure that everyone is OK with any updates we propose and no one is negatively impacted by the changes."

During Configuration Control Board meetings members talk about software issues, commercial-off-the-shelf updates and Information Assurance Vulnerability Alerts, she said.

The team ensures that any maintenance updates made to software baselines are compatible, Parikh said. It also works to ensure that there are not any integration issues and that separate systems can communicate, she said.

The team also implements the changes which are approved by the Configuration Control Board. Extensive testing is performed with IAVAs to make sure the changes will not break the network. In many cases, an update to one product will not work with a separate version of another product, she said.

"Once we do all of our testing on each software release we have to go through a formal materiel release process," Parikh said.

Through this process, the updates are approved by the commanding general, who must approve each product prior to its fielding. After testing is complete and the approval is received, the software is sent to the units in the field. Contractor Field Service Representatives are presently responsible for loading updates to the server, Parikh said.

If a case comes about where a critical IAVA is released and there is no time for the normal 90-day materiel release process, an emergency release can be provided. In that case, the update is evaluated, tested and it is determined how to get the fix to the field as soon as possible, she said.

"To do that release, we don't have to go through the full materiel release process before sending out the release," she said. "We can inform the command leadership and upon approval, send out the software update urgently."

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reporter for the Ocean County Observer, *a daily newspaper owned by Gannett Newspapers Inc. He has also written investigative and feature articles for many other publications.*

Acronym QuickScan

CTSF – Central Test and Support Facility
CFSR – Contractor Field Service Representatives
DICE – DoD Interoperability Communications Exercise
FIR – Field Incident Report
IAVA – Information Assurance Vulnerability Alert
JNN-N – Joint Network Node-Network
JUICE – Joint Users Interoperability Communications Exercise
NIPR – Non-Secure Internet Protocol Router
PDSS – Post-deployment software support
PM TRCS – Project Manager, Tactical Radio Communications Systems
PPSS – Post-production software support
SEC – Software Engineering Center
SE IPT – System Engineering Integrated Product Team
SIPR – Secure Internet Protocol Router
SCCB – Software Configuration Control Board

JNN-N support continues beyond production/fielding

By Josh Davidson

With its numerous components – the majority of which are commercial-off-the-shelf equipment – production of the Joint Network Node-Network is a delicate process that requires a dedicated team of technicians.

The careful planning and commitment, however, does not end there. Being the network for the Army's digital battlefield systems, means that support is needed after production and even following the fielding of the JNN-N.

Ekta Parikh, Software Support Lead of Product Manager JNN-N and the Software Engineering Center, recently explained those phases, which are known as post-deployment software support and post-production software support.

PDSS is the support that takes place during the initial fielding of software, Parikh said. At that point, fielding is yet to be completed and the system is still in production, she said.

A system enters its PPSS phase, once production is officially complete.

In terms of the JNN-N, post-deployment software support and post-production software support includes Information Assurance Vulnerability Alert releases; ensuring that there are no security vulnerabilities that would put a system at risk for attacks; providing Internetwork Operating System updates for JNN-N's routers, and performing version upgrades to make sure software is not outdated, Parikh said.

"We also perform software license procurement and maintenance renewals," she said.

The SEC is involved with purchasing software licenses from the initial conception of a system, said Andrew Zovak, PdM JNN-N System Engineering Integrated Product Team Support and Configuration Management Manager.

The spiral development concept has allowed some of JNN-N's systems to enter the PPSS phase, Parikh said. Since each spiral is considered its own network and version, each spiral is considered to be a separate system, she said. For this reason, JNN-N spirals 1-3 entered the PPSS phase soon after fielding was completed, she said. Each spiral is unique and SEC supports it upon the completion of fielding, she said.

SEC presently manages post deployment and post production software support for the JNN-N Spirals 1-7. In fiscal year 2007 Spirals 1-7 will all fall under PPSS. SEC will also assume software support for future spirals as they are fielded.

The scope of the SEC's efforts constantly varies with new spirals, refits, resets, new requirements and software and hardware upgrades. Other support the SEC provides includes the following:

- Assemblages of the JNN, Battalion Command Post Node, Unit Hub Node and Network Operations platforms;
- Support for more than 50

software applications and five computer operating systems;

- Support for software residing on hardware platforms including routers, switches, Call Managers, and Private Branch Exchange switches.

The Project Manager has taken on a different role during the fielding of their products than in the past, Parikh said. Previously, the PM handled only the role of a system developer, she said. Once a system was developed and fielded it moved into the maintenance phase. The PM did not become involved in maintaining a system. Instead, the Logistics and Readiness Center handled the phase from the hardware standpoint, with the SEC handling software.

"That is no longer the case and the PM is now called the life cycle manager and is responsible for the system from cradle to grave with SEC and LRC providing their respective services," Parikh said.

In other words, the PM is involved in every aspect of the system they oversee, from the beginning of software's development up until the point where it is pulled from the field.

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Acronym QuickScan

COTS – commercial-off-the-shelf
IAVA – Information Assurance Vulnerability Alert
IOS – Internetwork Operating System
JNN-N – Joint Network Node-Network
LRC – Logistics & Readiness Center
NetOps – Network Operations
PBX – Private Branch Exchange
PDSS – Post-deployment software support
PM – Project Manager
PPSS – Post-production software support
SEC – Software Engineering Center

IPs provide JNN-N community timely, relevant CM data

By Josh Davidson

Configuration Management is the control of changes, including the recording thereof, that are made to the hardware, software, firmware, and documentation throughout the system's lifecycle.

"Early in the Joint Network Node's lifecycle, the CM staff identified the need to deliver detailed CM data to the JNN-N community. The question was how to deliver the data. Web sites were the obvious choice," said Andrew Zovak, Product Manager JNN's CM Manager.

The PdM JNN CM staff has since designed three Web portals that provide the CM data as well as providing an Internet-based connection to its user community.

The sites are the public site, Army Knowledge Online branded site and the Web based CM site.

- The **public site** is open to all Internet users. The site includes a "Yellow Pages" type listing of JNN related public web links; a listing of available JNN-N resources; brief descriptions and information about the JNN-N; along with Product Manager JNN public documents, public announcements, and public contact information. This site can be accessed at http://www.jnn.army.mil or http://jnn.army.mil.
- The **AKO branded site** was developed using AKO's website framework in order to deliver data that is restricted from the public. This site requires AKO registration and can be accessed at https://www.us.army.mil by entering "PdM JNN" into the AKO site's search engine.

The site includes numerous repositories in categories such as General, Fielding, Engineering Testing, along with Training RePdM sources.

JNN's Public web site (www.jnn.army.mil)

An engineering test is a basic run-through of the equipment, to see that the equipment is running correctly, Zovak said.

The site also includes a listing of JNN web links; leader and group messages; current events and activities; announcements, accomplishments and awards; and the PdM JNN's point of contact list and calendar.

- An **internal WebCM portal** is linked from the AKO site.

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Acronym QuickScan

AKO – Army Knowledge Online
BnCPN – Battalion Command Post Node
CM – Configuration Management
JNN-Network – Joint Network Node-Network
NET – New Equipment Training
NetOps – Network Operations
PdM – Product Manager
PM – Program Manager
SIPR – Secure Internet Protocol Routed
UHUB – Unit Hub Node
WebCM – Web based Configuration Management

JUICE allows JNN-N staff to solve interoperability issues of future

By Josh Davidson

The implementation of a system that is not backwards compatible might prevent it from interoperating with other systems on the network. Lack of backwards compatibility will prevent Warfighters from communicating with each other and connecting to the digital systems that let them map their course, know the locations of their buddies, plan fires, stay aware of conditions on the battlefield and more. When communications are lost among Soldiers and their commanders, disastrous consequences might occur. Constantly monitoring systems to ensure interoperability is a monumental effort.

That is why Ekta Parikh, Software Support Lead for Product Manager Joint Network Node and the Software Engineering Center, welcomed the chance to test the interoperability of systems on the JNN-N during the Joint Users Interoperability Communications Exercise 2006. JNN-N is the communications backbone for the Army forces, which tested their systems during the exercise held July 20 to Aug. 11 at the Communications-Electronics Life Cycle Management Command Software Engineering Center of Fort Monmouth, N.J.

The exercise enabled testing of systems to validate that they were backwards compatible on the JNN-N. It let technicians identify interoperability issues before they arise in the field, Parikh said. If an issue occurs where a device goes end-of-life, updates must be performed, so that each system can communicate with one another, she said.

"JUICE will prevent those problems, because if we know a new system or product is being developed for future fieldings, this gives us the opportunity to test it and get one step ahead of the problem," Parikh said.

JUICE is an annual joint coalition and interagency networked communications exercise performed in support of Program Executive Office for Command, Control, Communications Tactical. MG Michael Mazzucchi, Program Executive Officer Command, Control, Communications Tactical and commanding general of Fort Monmouth also serves as the Executive Agent for Theater Joint Tactical Networks. The exercise's assessments/objectives are planned, coordinated, engineered and managed by the SEC. The EA-TJTN Action Office collates all test information into JUICE reports for distribution to the community.

The test's final days included visits by GEN Benjamin S. Griffin, commanding general, U.S. Army Materiel Command; MG Dennis C. Moran, vice director for Command, Control, Communications, and Computer Systems (J6); along with many senior leaders from other services and the Communications-Electronics Life Cycle Management Command.

"Nothing is more critical in my mind than the interoperability between all of the services," Griffin said. "This exercise, JUICE here at Fort Monmouth,

gives us an opportunity on an annual basis, but really more frequently on almost a day-to-day basis to work those technical challenges, if you will, between the services. (It gives us an opportunity) to share good ideas, so that from a joint perspective, interoperabilites increase and really Warfighting capabilities increase."

Griffin said that he had the chance to tour the exercise, talk to those who took part and hear their ideas on "where we are today and really where we are going in the future."

"Exercises like this allow us to improve our capability and really take lessons learned from Iraq and Afghanistan and other places around the world where U.S. forces are deployed and bring those back in; and then work on those things that we need to improve our interoperability and our capability for the future," Griffin said. "It's an invaluable opportunity here to bring the technical expertise and the field expertise to share together in this kind of setting."

Mazzucchi and the C-E LCMC team went "all out" to gather representatives from the Joint community including the Army and the other services to provide demonstrations and share ideas, Griffin said.

"It's one thing to have a slide briefing and talk about what you can do," Griffin said. "It's another thing to bring it up here and really put it into operation and demonstrate it firsthand; and then to allow the folks like me and others from all the services to come in and see firsthand exactly what we've got here, where we're headed, where the challenges are, because that's always key."

The exercise allowed for the identification of solutions to problem areas. It allowed for the finding of areas where the military needs to continue to focus and improve upon, Griffin said.

"But if we're going to achieve what we're after from a joint perspective, then there are exercises like this that we must continue to do, and I applaud MG Mazzucchi and the whole team up here from (C-E LCMC), both from Research and Development Command, to the PEO and PM Community, from the logistics and maintenance side and all the services reps that I saw here as well as the civilian workers (and) contractor community, because they're all well represented here."

LTC Rodney Mentzer, JNN-N's Product Manager, said that the JNN-N is a joint program in that it works hand-in-hand with the Marine Corps, the U.S. Office of Homeland Security, and all other entities that tie into the tactical Internet in an Internet Protocol-based network.

"For example, the United States Marine Corps has their Liaison Officer resident within our Project Manager Tactical Radio Communications Systems engineering office," Mentzer said. "He sits right outside of our office now and that's in an effort to ensure the Marine Corps is in lock-step with PdM JNN, as we move forward to solve this joint community."

"The Marine Corps has a product they call SWAN (the Ship Wide Area Network), that is very much similar to JNN-Network," Mentzer said. "JNN-Network is a compilation of commercial products. We buy routers, and switchers, and satellite transceivers and tie them together. The Marine Corps has done the same thing. So now, as we move forward with this and we are working hand-in-hand in this maneuver BCT (Brigade Combat Team) and this modular force that the Army and Marine Corps are going through, we want to make sure that we're lock-step with them with all improvements and all of our enhancements, so that we stay in sync with what they're doing."

PdM JNN also became involved with the Office of Homeland Security's relief effort during the aftermath of Hurricane Katrina. Aside from knocking out cell phone communications, the hurricane left thousands of people homeless along the Gulf Coast and resulted in more than 1,300 deaths on Aug. 29, 2005.

"When (the Gulf Coast) lost all commercial infrastructures, in terms of communications and Internet capability, it was the JNN system and JNN-like components that were deployed to the airport of New Orleans, La., and to places in Mississippi to stand-up a Wide Area Network," Mentzer said. "This allowed our first responders and all the help that was needed to overcome the disaster that was Hurricane Katrina. So, the JNN-Network is not truly a coalition, we haven't branched outside of our own services yet, but we're definitely lock-step in the Joint world, working with the Marine Corps to try to move forward as we proceed down this digital world."

JUICE also allowed PdM JNN's staff to make sure the system can communicate with other available systems, Parikh said. PdM JNN's staff must look into the future and see which interoperability issues might come about, she said. JUICE also allowed them to look at filling present gaps in the JNN-N and see which products might not be beneficial to use with the system, she said.

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Acronym QuickScan

BCT – Brigade Combat Team
CE-LCMC – Communications-Electronics Life Cycle Management Command
EA-TJTN – Executive Agent for Theater Joint Tactical Networks
JNN – Joint Network Node
JNN-N – Joint Network Node Network
JUICE – Joint Users Interoperability Communications Exercise
PdM – Product Manager
PM – Project Manager
PEO C3T – Program Executive Office, Command, Control, Communications-Tactical
PM TRCS – Project Manager, Tactical Radio Communications Systems
SEC – Software Engineering Center
SWAN – Ship Wide Area Network

Trust within C-E LCMC helps programs like JNN succeed

By Nada Brackmann

The formation of C-E LCMC

Just over two years ago, in August of 2002, a formal Memorandum of Agreement was signed by the GEN Paul Kern, then commanding general of the Army Materiel Command and Assistant Secretary of the Army, Acquisition Logistics and Technology's Army Acquisition Executive, Honorable Claude M. Bolton, establishing the Communications-Electronics Life Cycle Management Command. The C-E LCMC is headquartered at Fort Monmouth, N.J.

The primary purpose of the formation of the C-E LCMC serves to promote the integration and coordination of priorities across the Communications Electronics Command, Program Executive Office Command Control and Communications Tactical, and Program Executive Office Intelligence Electronic Sensors and Warfare according to COL Kent Woods, chief of staff of the C-E LCMC.

While CECOM's higher headquarters remains to be AMC and the PEOs still ultimately report to ASAALT, both organizations are lead by MG Michael Mazzucchi serving in a dual-hatted capacity as both the C-E LCMC's commanding general and the Program Executive Officer Command Control and Communications Tactical.

MG Michael Mazzucchi

The Communications Electronics Research and Development Center, which reports to the Research Development Electronics Command's, while not officially designated, is a full member of the CE LCMC.

Integration…changing the way we do business

According to Woods, "In the past, the Project Managers' focus has essentially been on the acquisition and fielding perspective. The Research and Development was out there doing the R&D and things were not necessarily linked to what the PMs were trying to do. The Sustainment community was not really linked in either. At some point when a system was fielded across the Army and was ready to be transitioned between the EE and SS peg, the PM quit worrying about it and it was the sustainment community's job to come up with how to sustain that particular system."

"The goal of LCMC is to integrate those parts of Life Cycle Management back under the PM. The PM is the epicenter of LCM, and by charter they are responsible for full life cycle management," Woods added.

"The biggest way we've changed is that there is one individual [the CG C-E LCMC] who is now in charge of integrating and setting priorities for the Software Engineering Center, the Acquisition Center, Tobyhanna Army Depot, Information Systems Engineering Command, and the two PEOs, as well as [working together with] CERDEC," said Woods.

MG Mazzucchi remains chartered as Program Executive Officer for C3T, and is the only commanding general of an LCMC that has a dual role.

Woods stated that the dual hatted role is an advantage because it assists in that integration aspect. "MG Mazzucchi now has the ability to impact through his presentation, to AMC for instance, in building the POM here are the priorities of SEC [for example]. He can better align the priorities with what C3T and IEWS are doing as opposed to the SEC or LRC putting a higher priority somewhere else," Woods said.

Woods went on to say, "Although MG Mazzucchi does not have the ability to impact PEO IEWS Milestone Decision Authority, he does have the ability to affect the priorities of the centers that support PEO IEWS. Mazzucchi certainly has the relationship with Edward Bair,that they have some pretty frank discussions about priorities that need to be changed or the order in which they are executed."

A matter of trust

In a recent interview with Mazzucchi, he stated that the Army is not only transforming its combat forces, but also those organizations that build and make the Army better.

The new construct of the C-E Life Cycle Management Command is helping to make programs like the Joint Network Node-Network succeed.

"Although we have worked as a team across the development, acquisition, sustainment and logistics part of materiel development for the last decade, the C-E LCMC has brought a new understanding of how to build systems and how to sustain them. It really comes down to a five letter word called TRUST." Mazzucchi said. "Because now, any member of the team can pick up the phone, stop by, talk to, and engage any other member of the team knowing that regardless of organizational construct or chain of command, and they will be supported."

"It is that trust relationship that is new and different," Mazzucchi

said.

"It is almost, some would say, like a religion. If you believe it, you can make it happen. We used that construct, that new way of thinking and operating, to develop the JNN. That system, unlike any of the others, is one that has truly transformed the way we do acquisition. While other systems have been modified or enhanced for our current warfight, JNN has completely replaced an existing system. In order to do it in a short time and as well as we have, has taken the understanding and use of LCMC concepts to a new level," Mazzucchi said.

C-E LCMC team effort helps JNN succeed

Under Project Manager Tactical Radio Communications Systems for Product Manager, James Sintic is the Deputy Chief of the Technical Management Division. Sintic credits JNN's success to a total team effort of each of the organizations within the C-E LCMC.

"We needed to leverage the partnership of the C-E LCMC," said Sintic.

The organizations within the C-E LCMC were up to the challenge. The C-E LCMC Acquisition Center employed the use of Alpha contracting methods that enabled them to negotiate and execute a contract in just 26 days, where it would have normally taken 120 days.

The CERDEC S&TCD (Space and Terrestrial Directorate)/SED (System Engineering Directorate)/ C2D (Command and Control Directorate), SEC, and PM TRCS had been teamed before JNN's pre-birth stage starting with the Brigade Subscriber Nodes, Warfighter Information Network Proof of Concept demonstrating that commercial off-the-shelf technology could withstand the rigors of today's battlefield environment.

CERDEC continues to support JNN through the JNN Network Test bed that is funded by PM TRCS. Once used for Operation Iraqi Freedom theater support, the test bed is currently being used for investigating and recommending tech-insertions to the Systems Engineering Integrated Product Team, as well as testing and verifying architecture changes and recommendations made by the SE IPT. The test bed is also used for working with vendors to verify and test product configurations.

According to Mark Moller, an attorney with the C-E LCMC Legal department who helped support JNN, " We were involved in providing legal advice in the determining the best strategy to acquire the JNN in the most expeditious time frame to meet the Army's immediate needs. The JNN involved many facets of acquisition law to include legal and factual issues concerning contract formation, modification, administration and funding."

"There were NETOPS solutions needed for JNN. We also needed to coordinate with CERDEC's Systems Engineering Directorate and the Software Engineering Center. It was also critical that we coordinate with the LRC for logistics, trucks, trailers and generators" Sintic said.

"All of the organizations that are part of the C-E LCMC started to glue together the whole program in terms of being able to support it logistically. We received support all the way through the top of the C-E LCMC chain such as being able to work the POM (Program Objective Memorandum) actions. These are all things we needed to do. It really brought the team together. It is truly a team effort, having the total communications systems life cycle management and support," Sintic added.

Sintic continued, "I am in the engineering department, but I could not do my job without all of those pieces of the puzzle being in place. We all work together. Even though we developed the system, there were maybe a handful of engineers who got the ball rolling in terms of the creation of JNN, but it takes a team behind those engineers to make it all possible."

"And those are the folks who make the program run as smoothly as it does today. They are the ones that make sure the Warfighter has the latest software they need, the latest hardware, all of the parts, the training, and all of the critical elements that keep the Warfighter sustained while they are in battle. It is all a critical part of what the C-E LCMC does today and I am proud to say that we are a part of it." Sintic said.

Nada Brackmann of Symbolic Systems, Inc. is an information/project manager supporting the Program Executive Office, Command Control and Communications Tactical Chief Information and Knowledge Management Office in Fort Monmouth, N.J.

Acronym QuickScan

AMC – Army Materiel Command
ASAALT – Assistant Secretary of the Army, Acquisition Logistics and Technology
BSN – Brigade Subscriber Node
C2D – Command and Control Directorate
CECOM – Communications – Electronics Command
CG – Commanding General
C-E LCMC –- Communications-Electronics Life Cycle Management Command
CERDEC – Communications Electronics Research and Development Center
ISEC – Information Systems Engineering Command
JNN – Joint Network Node
JNN-N – Joint Network Node-Network
LCM – Life Cycle Management
LRC – Logistics Readiness Center
MOA – Memorandum of Agreement
PEO C3T – Program Executive Office Command Control Communications Tactical
PEO IEWS – Program Executive Office Intelligence Electronic Sensors and Warfare
PM – Project Manager
PM TRCS – Project Manager Tactical Radio Communications Systems
POM -- Program Objective Memorandum
R&D – Research and Development
RDECOM – Research Development Electronics Command
S&TCD – Space and Terrestrial Communications Directorate
SEC – Software Engineering Center
SED – Systems Engineering Directorate
SE IPT – Systems Engineering Integrated Product Team
TYAD – Tobyhanna Army Depot
WIN-POC – Warfighter Information Network Proof of Concept

NSC-T provides: JNN-N training support, remote troubleshooting, Soldier training

By Josh Davidson

Headquartered at Fort Gordon, Ga., the Network Service Center-Training serves many purposes to both the technical expert and Warfighter. The center is used to provide satellite, voice, and data services to Joint Network Node-Network equipped units and also functions as an experimentation facility where engineers test emerging technologies and Soldiers receive hands-on training.

Dale White, chief of the NSC-T, recently provided a tour of the facility, along with a glimpse of what it provides. White demonstrated how a Multi-Frequency Time Division Multiple Access Master Reference Terminal is used to establish multiple and separate satellite communications networks and shows the location of the JNN-N nodes throughout the 50 states, through icons on a digital map. The NSC-T defines network membership, configuration, connectivity, bandwidth allocation between nodes, and much more.

The NSC-T is the central management center of the JNN-N nodes represented White said.

"The whole concept of this is centralized management and control," White said. "We've had as many as 50-plus nodes that we've been responsible for up in operation."

The NSC-T's management capability can be used to troubleshoot nodes at remote training locations, he said. In that case, a technician can troubleshoot down into a remote system and gather information to help a unit which is having difficulty, he said.

Unlike the legacy Ground Mobile Forces point-to-point network JNN-N is Internet Protocol based. The Army's transition to a modular fighting force and the use of network centric waveforms mandates the capability that the NSC-T provides. The NSC-T staff are present to provide central management of the entire network.

The Signal Center's NSC-T has the capability to support an entire division, he said.

"The NSC-T can support a full-up division or a mix and match of different brigades from different divisions anywhere in the continental United States, Hawaii, and Alaska," White said.

The NSC-T contains a bank of Time Division Multiple Access modems and a bank of Frequency Division Multiple Access modems, he said.

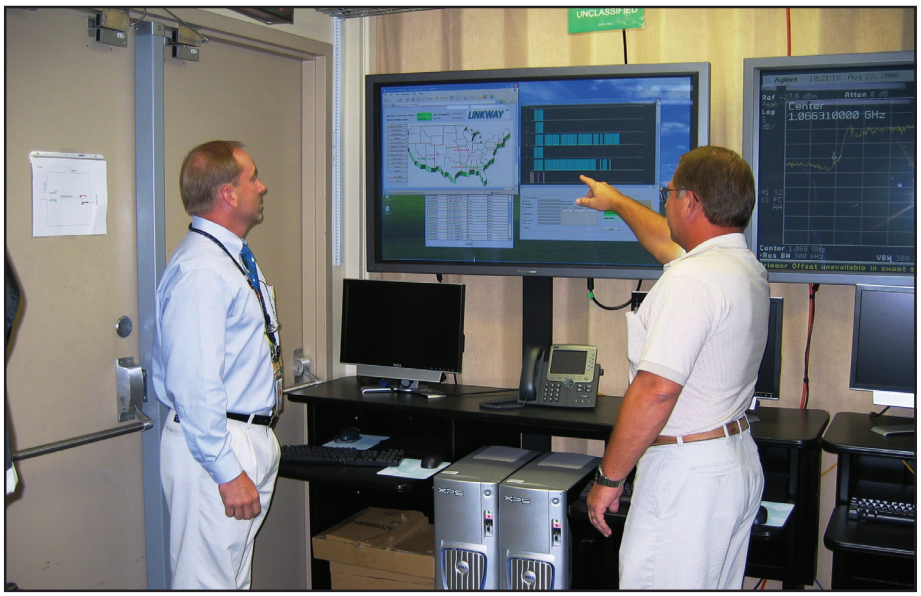
The original capability was created in 2004, when the JNN-N was first fielded to the 3rd Infantry Division. At the time, representatives from Project Manager, Tactical Radio Communications Systems requested Subject Matter Expertise support, he said. Since then, the lab has had TDMA master reference terminals on line non stop to support the PM's continuing JNN-N fielding. The ongoing support to PM TRCS is in addition to the NSC-T mission of supporting units already fielded with JNN equipment.

JNN-N was fielded originally to divisions who were deploying to OIF/OEF. When the fielding reached Spiral Five, the Signal Center looked into starting a sustainment training center for the Soldiers, which in turn led to the NSC-T. It was originally called a Regional Training Hub.

The NSC-T officially came online on May 15, 2006. Together with the NSC-T establishment was the Army's CIO/G6 funding for and Network Enterprise Technology Command procurement of dedicated satellite bandwidth for JNN-N and Phoenix users. Users can be on the air in one week from the time they put in a satellite access request, White said. Since bandwidth previously had to go through the contracting process, satellite access use to take between six to eight weeks, he said.

"We have supported almost two dozen units between 15 May and 15 August," he said.

While the NSC-T's main role is to support JNN-N sustainment



training missions at Army bases, the lab is also used by those who wish to test specific equipment at the lab itself, he said. With the NSC-T co-located with the Battle Command Battle Lab (Gordon), an excellent blending of capabilities exists.

For example, someone can come in and test how their Mounted Battle Command-on-the-move works in a JNN-N environment using the NSC-T, White said.

The NSC-T allows for experimentation, concept and doctrine development and Tactics, Techniques, and Procedures development, he said.

It also provides a live resident training environment where a student can receive support and gain hands-on experience with equipment.

"The NSC-T serves many masters, which is a good thing," White said.

The NSC-T's first phase of development involved the interim operational capability phase one, which included standing up multiple MF-TDMA networks, performing technical validation of access requests, remote monitor and control of training missions on two satellites, troubleshooting of remote networks, and more, he said.

Phase Two will include the components of Phase One, but also added Defense Information Systems Network services. Phase Two will most likely be completed by Sept. 1 and the NSC-T is expected to be at its full operational capability on Oct. 1, 2006.

White stressed that the NSC-T is not used for operational missions. The NSC-T supports training missions including home station training, Battle Command Training Center events, SIGCEN training networks, and Combat Training Center rotations but does not handle anything that is traditionally the role of NETCOM or the Department of Defense's Defense Information Systems Agency, White said.

One of a NSC-T's biggest challenges is getting Soldiers to understand linear polarity, he said. Linear polarity occurs when satellites broadcast their signals with the waveform being sent from the antenna either in the vertical plane or the horizontal plane. The process allows the satellite to transmit twice the amount of channels in the same amount of bandwidth. During the process, the signals from the opposite polarity are attenuated enough so that they don't interfere with each other. Operating in a commercial satellite environment is challenging to a Soldier who has never been exposed to such an atmosphere, White said.

Product Manager JNN-N is within Project Manager Tactical Radio Communications Systems. PM TRCS is within the Army's Program Executive Office for Command, Control and Communications Tactical, headquartered at Fort Monmouth, N.J.

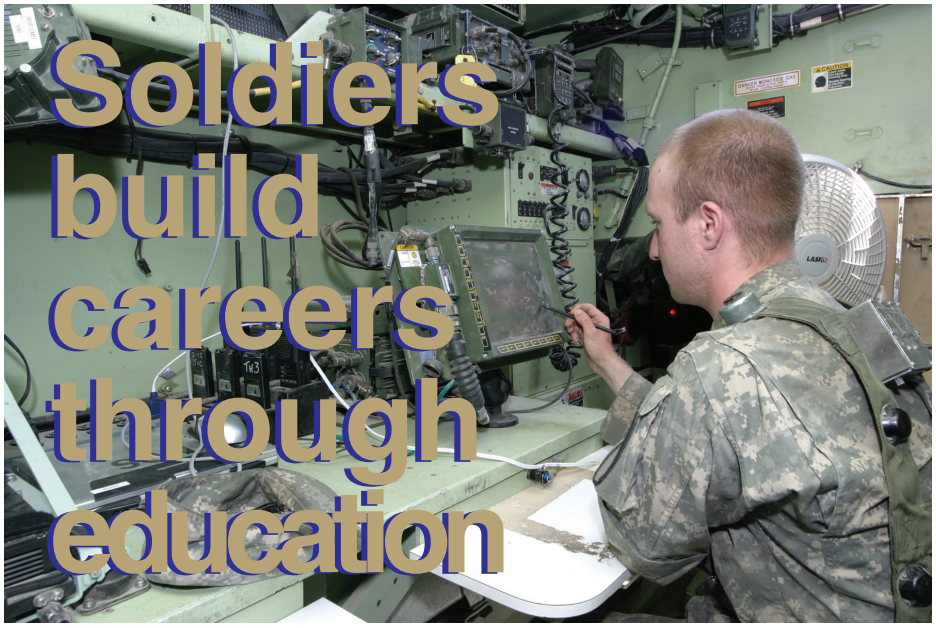
Dale White is the chief of the newly established NSC-T and is a retired Army First Sergeant with 21 years of service. He holds a Bachelor's Degree in Computer Science from the University of Maryland. He has been a Department of the Army civilian at Fort Gordon, Ga., since 1995.

Josh Davidson of Symbolic Systems, Inc. is a news writer supporting the Program Executive Office, Command, Control, Communications Tactical Chief Information Office in Fort Monmouth, N.J. He holds a Bachelor's Degree in Journalism/ Professional Writing from the College of New Jersey (formerly Trenton State College). He previously worked as a municipal beat reporter for the Ocean County Observer, *a daily newspaper owned by Gannett Newspapers Inc.*

Acronym QuickScan

CONUS – Continental United States
DISA – Defense Information Systems Agency
DISN – Defense Information Systems Network
FDMA – Frequency Division Multiple Access
IP – Internet Protocol
JNN – Joint Network Node
JNN-N – Joint Network Node-Network
MBCOTM – Mounted Battle Command-on-the-Move
MF-TDMA – Multi-Frequency Time Division Multiple Access
MRT – Master Reference Terminal
NETCOM – Network Enterprise Technology Command
NSC-T – Network Service Center – Training
OEF – Operation Enduring Freedom
OIF – Operation Iraqi Freedom
PEO C3T – Program Executive Office, Command, Control, Communications Tactical
PM TRCS – Project Manager, Tactical Radio Communications Systems
SME – Subject Matter Expert
SIGCEN – Signal Center
TDMA – Time Division Multiple Access
TTP – Tactics, Techniques, and Procedures

Soldiers build careers through education



By Josh Davidson

When MSG Stephon M. Sterns came into the Army in 1987, he wasn't provided with the educational tools a Soldier uses today, to head down the appropriate path for his military or civilian career. Missing were the Web sites and course descriptions that are now available for Soldiers at the Signal Center and beyond.

"Nobody really had a plan for you like we're trying to devise right now," Sterns said.

Sterns, who entered the Army with two years of college under his belt, is now the non-commissioned officer-in-charge of the Joint Network Node-Network/LandWarNet University Cell at the Signal Center in Fort Gordon, Ga.

The Signal Center presently offers a number of courses such as Computer Science, Engineering and Design, Networking Essentials, Information Management, Information Technology and Information Assurance, said LTC Herman Gonzalez, officer-in-charge in the Joint Network Node-Network/ LandWarNet University Cell.

Since the Joint Network Node-Network is comprised mainly of commercial-off-the-shelf equipment, the training Soldiers receive on the system will enhance their ability to work with COTS products throughout their military career, Sterns said.

The JNN-Network relies on Cisco Systems IP routers, switches, Voice-over-Internet Protocol call processing software and telephones along with net.com Promina Multiplexers, Redcom Laboratories private branch exchange switches and Juniper Networks NetScreen firewalls.

"The technical skills that a Signal Soldier receives at the Signal Center are very rewarding because they are much in par with what the Industry uses," Gonzalez said. "Most of these Soldiers become very agile and adaptive in skill areas that are highly technical. In addition, the Army has implemented programs that grant Soldiers promotion points if they acquire certifications."

The Signal Center is developing a 25 Bravo Roadmap that would serve as a template for all other Military Occupation Specialties to use. This would serve to guide a Soldier towards the courses, which are most appropriate for his or her career path. This non-mandatory roadmap would ensure their educational direction from the beginning of their Army career and would allow them to see where military training can impact their degree program.

The roadmap would prevent Soldiers from taking unnecessary courses that they will already get credit for with their military training.

Even though there are presently no specified educational requirements for promotion to any enlisted military rank, it is strongly recommended that Soldiers use education for self-improvement. Education might be helpful in separating a Soldier from their peers for promotion, according to the roadmap's draft.

"Having advanced civilian education always enhances the Soldier as a whole and makes him or her more competitive," Gonzalez said. "It also reflects dedication and commitment to be the best at what they are and want to be. There is no degree requirement to be selected for promotion, but (certainly) an enlisted Soldier enhances their ability to separate themselves from their peers and be selected for promotion."

The College Level Examination Program allows a Soldier to take a test and get credit for a college class free of charge. The program costs $60 for civilians. CLEP and the Defense Activity for Non-Traditional Education Support are both Army wide test out programs that are offered at the Signal Center.

The Service-members Opportunity College Associates Degree program is made up of colleges that offer associate and bachelor's degree plans that are located on or are accessible to worldwide Army installations. The colleges have networked to form a joint service where each college accepts credits from one another. The action guarantees that Army students and their adult family members can continue toward completion of their degrees even if they are transferred through the Army several times. Distance learning degrees are also available that require no classroom residency. SOCAD is the Service-members Opportunity Colleges degree program for the Army.

Educational programs are an incentive to keep Soldiers in the

Army, said SGM Edgardo Ramirez, Directorate of Training sergeant major.

Soldiers who dedicate serious attention to their education might accomplish their educational goals faster than the roadmap indicates, according to the roadmap's draft. A Soldier who doesn't take their education seriously, however, should not expect to accomplish the goals outlined in the Educational Roadmap's drafted timeline.

"It takes a Soldier with high motivation and dedication to take advantage of all training opportunities available to them," Gonzalez said. "In addition, the Soldier is applying these skills in a higher call, which is to defend the nation."

Josh Davidson of Symbolic Systems, Inc. is a news writer supporting the Program Executive Office, Command, Control, Communications Tactical Chief Information Office in Fort Monmouth, N.J. He holds a Bachelor's Degree in Journalism/Professional Writing from the College of New Jersey (formerly Trenton State College). He previously worked as a municipal beat reporter for the Ocean County Observer, *a daily newspaper owned by Gannett Newspapers Inc. He has also written investigative and feature articles for many other publications.*

Acronym QuickScan

COTS – commercial-off-the-shelf
CLEP – College Level Examination Program
DANTES – Defense Activity for Non-Traditional Education Support
JNN-Network – Joint Network Node-Network
MOS – Military Occupation Specialty
NCOIC – non-commissioned officer-in-charge
PBX – private branch exchange
SOCAD – Service-members Opportunity College Associates Degree
SOC – Service-members Opportunity Colleges
VoIP – Voice-over-Internet Protocol

Soldiers: JNN-N transmits more information, faster – saves lives

By Josh Davidson

SGT Ricardo Vidaurri recalled a story told by Soldiers from the 3rd Infantry Division, which illustrates just how long it takes to set up the Joint Network Node-Network.

The Soldiers, according to Vidaurri, were heading into Baghdad, Iraq, when their node centers were destroyed completely in an explosion. However, they quickly set up the next node center, linked up to the satellite and were able to communicate further up ahead.

"The faster you are able to put up your antennas, your shots, your links; the more lives you are going to save, I feel," Vidaurri said.

JNN-N is a converged tactical communications network providing voice, data and video capability to connect the battalion level Warfighter to areas throughout the world at the quick halt. It's the only network that brings these Internet capabilities to the battlefield.

Warfighters are presently using the JNN-N in theatre during Operation Iraqi Freedom to its fullest capacity, along with the new Army Battle Command Systems equipment, said MAJ Laura Rimmer, of the 1st Cavalry Division.

"It's allowed them to transport more information quicker with the satellite over-the-network to reach the end stations, allowing the units to perform their Command and Control functions in a more efficient manner," Rimmer said.

JNN-N is a converged tactical communications network providing voice, data and video capability to connect the battalion level Warfighter to areas throughout the world at the quick halt. It's the only network that brings these Internet capabilities to the battlefield.

JNN-N is designed to be a faster and more efficient system than its predecessor, Mobile Subscriber Equipment, she said.

"Soldiers think the new equipment is fantastic," Rimmer said. "It's (comprised of) state-of-the-art commercial-off-the-shelf products. They're learning new tools and new fundamentals. It stretches their brain capacity and gives them a challenge in their shelters in bringing in this network. It's exciting for them to operate this equipment."

Prior to JNN-N, Soldiers had to operate around a cell tower and

needed to stay within range to maintain connectivity, said SGT Theodore Miller. Miller works with the JNN Battalion Command Post Node and with Satellite trailers.

"With the JNN, its satellite system and its HCLOS back up, you no longer have to worry about that," Miller said. "You can be in separate areas and still be connected in the same network."

The HCLOS radio program is an upgrade to the tactical line-of-sight transmission assemblages, AN/TRC-190 versions 1-4, to support increased data transmission.

JNN-N and HCLOS are both developed within Project Manager Tactical Radio Communications Systems of the Army's Program Executive Office for Command, Control and Communications Tactical.

"MSE … basically screamed out, 'Here I am, Here I am,' to direction finding radio," Miller said. "With the new Battalion Command Post Node and Ku satellite trailers, you transmit directly up into a satellite in space and drop back down, so there's no good way to actually track the location of where you're actually going to be at. It's more of a stealth feature for the satellite equipment. It's harder to track."

The digital systems that exist on the JNN-N, such as Command Post of the Future, provides Commanders with a more current view of the battlefield in real-time, said CPT Glenn Medlock, a Network Engineer and Battle Captain for the 1st Cavalry Division.

JNN-N's increased bandwidth furthers the commander's capability, provides more capability to his S6, and provides additional resources that he can use in order to command the battlefield in a real-time environment, said Medlock.

"JNN-N is designed to support modularity," Medlock said. "By having JNN-N as a piece of the modularity concept, it allows the brigade to actually move out on its own and function in a network operations perspective with an entire network onto itself."

As the modern day Soldier is of the computer generation, Soldiers are already familiar with the JNN-N's equipment through past experience, Medlock said.

"So, I think those Soldiers are adaptable to the new technology that's being put in front of them," he said.

The ABCS that is tied to the network, allows the commander to fight more efficiently and with increased effectiveness, Rimmer said.

"It gives him the capability to bring all the tools into one location, at one time, providing information for him at his fingertips, so that he can make decisions in a moment's notice," she said. "JNN-N provides that capability with all of its assets, using all of the bandwidth that's available, giving him a greater capacity than he's ever had before."

Vidaurri said that acquiring a satellite through the JNN-N, is much faster than it was to do so with the Secure Mobile Anti-Jam Reliable Tactical Terminal he used in Iraq.

JNN-N lets the Warfighter jump in and out of any system at any time or place, Vidaurri said. It also can be set up in a new location within a reasonable amount of time, he said.

"It's very, very adaptable for the guys out there, because once you're in a hot spot and you need to get something through…Lets say, you need to get a shot in or something (such as) a new site set up, a relay site, and you're shooting to another node center," Vidaurri said. "You have to get this shot in, just in case the satellite goes out and you need communications. The new systems in the HCLOS will actually get these shots in faster and actually save a lot more lives in the process."

In comparison to the Voice-over-Radio provided by MSE, JNN-N's Voice-over-Internet-Protocol capability allows for text messaging, e-mail, voice communications and conference calls, Miller said.

"The applications are endless," Miller said. "They've really gone outside of the box. Someone said, 'We need something that does everything,' and they've come up with the JNN."

Miller said the system will be trained and fielded prior to deployment.

"There's not going to be a whole lot of reconfiguration and the network managers plan all of that out well ahead of time," he said. "So, when we drop into country, no matter where we are, we'll have all the data that we need prior to actually getting there. It's all computer-based, so it takes just a matter of minutes to actually crank out the new information for all the settings for a particular area. It's not like a long, drawn out, lengthy process of trying to map out your terrain to find your dead spots. You don't have that with JNN-N."

Josh Davidson of Symbolic Systems, Inc. is a news writer supporting the Program Executive Office, Command, Control, Communications Tactical Chief Information Office, Fort Monmouth, N.J. He holds a Bachelor's Degree in Journalism/Professional Writing from the College of New Jersey (formerly Trenton State College).

Acronym QuickScan

ABCE and SoS – Army Battle Command and Enabler System of Systems test
BnCPN – Battalion Command Post Node
COTS – commercial-off-the-shelf
CPOF – Command Post of the Future
HCLOS – High Capacity line-of-sight
JNN-N – Joint Network Node-Network
MOS – Military Occupational Specialty
MSE – Mobile Subscriber Equipment
PEO C3T – Program Executive Office for Command, Control, and Communications Tactical
PM TRCS- Project Manager Tactical Radio Communications Systems
PM TRCS
SMART-T - Secure Mobile Anti-Jam Reliable Tactical Terminal

What Soldiers are saying about JNN-N:

As viewed by S6 currently deployed in Iraq

By Nada Brackmann

MAJ Gary Ridenhour, recently served as Aide-de-Camp to LTG Steven Boutelle, Army CIO/G6 and is currently serving as the Heavy Brigade Combat Team S6 in the 4th Infantry Division. He shares his insights on how the Joint Network Node-Network is currently performing in Iraq.

'The ability for a company commander to receive intelligence and operational data in a large digital capacity is a huge enabler.'

Q: What have your experiences been with 4ID with regard to the performance of JNN?

A: As a Heavy Brigade Combat Team S6 in 4th Infantry Division, my experience with Joint Network Node-Network has been pretty unique. In the Spring of 1995, modularity, a major Army Battle Command Systems upgrade, several new battle command equipment fieldings (such as Command Post of the Future - CPOF), an intense Operation Iraqi Freedom train up and the JNN-N all came crashing down at once. Based on production timelines and training obligations, my HBCT was the last in 4ID to receive the JNN-N and the first to deploy to OIF. We conducted our mission rehearsal exercise at the National Training Center without it. While our Signal Company received a quality new equipment training period prior to deployment, we had literally [only] days in Fort Hood motorpools to put everything together in terms of establishing a HBCT network and test our ABCS and other command post systems prior to putting our equipment on the boats for deployment. We were assuming the largest HBCT area of operations in Iraq, as our boundaries extended from a portion of the Sunni Triangle South of Baghdad all the way South to the Saudi Arabian border. We had four separate forward operating bases the size of small towns to occupy. I had quite a few sleepless nights as it was a major concern to me that we would have difficulty establishing command and control for the HBCT in combat due to our inexperience with the JNN-N. As we deployed into theater, my concerns proved to be completely unwarranted. We had a network up and running in a very short period of time. We conducted a relief in place with a Mobile Subscriber Equipment equipped unit, and their jaws dropped at the speed we had our wide area network established. From that moment forward, it has turned out to be simply fabulous equipment. We have had extremely reliable connectivity to all of our units during the course of this deployment.

Q: What has the unit's reaction been to the JNN-N? Are they seeing benefits, if so, what do they feel are its most important capabilities?

A: The biggest shift has been the extension of service to the battalion level. From a maneuver battalion perspective, it's like never tasting ice cream before and suddenly being given a lifetime supply of Dutch chocolate. With 4ID's digital communication architecture prior to the JNN-N, the battalions were getting their data from the Near Term Digital Radio. We were limited to a short range of transmission distance, and it only served ABCS platforms such as Maneuver Control Systems – Light (MCS-Light). There were no phones and no email, so the units were still very focused on VHF communication. The JNN-Network has given battal-

ions the ability to extend non-secure internet protocol router and secure internet protocol router voice and data service not only to their Command Posts, but down to company/troop/battery level on the Forward Operating Bases. The ability for a company commander to receive intelligence and operational data in a large digital capacity is a huge enabler, not to mention the benefits of streamlining his administrative operations. The Voice-over-Internet Protocol phones are also a big hit with everyone, as they are crystal clear. We have to remind folks often that we are using tactical assets, and they are not receiving service from a garrison Directorate of Information Management. That, to me, is the ultimate compliment.

Q: What has been your experience with using the JNN-N in a FOB versus in a remote environment, at the quick halt?

A: I would say that using the JNN-N in a FOB environment stretches the capability far greater than using them remotely. In my opinion, it is pretty easy to pull JNN-N equipment next to a 30-Soldier mobile command post and establish Ku satellite communication supporting a somewhat pre-wired command post Local Area Network. In an FOB environment, you are supporting hundreds of users, implementing line-of-sight augmentation to your satellite meshes, and incorporating links to legacy equipment. It may not be as sexy as jumping around the battlefield, but from a technical perspective it is much more challenging.

Q: What improvements would you recommend to the JNN-N?

A: Quite frankly, the biggest challenges I faced as a HBCT S6 were more LAN related than wide area network related which the JNN-N is largely focused on. If you look at all of the briefing slides that have ever been passed around on the JNN-N, you realize that it is very mobile command post centric. Maneuver units are married to mobile command posts typically during the first three phases of a campaign, but when you move into phase four or the transition phase, units will invariably gravitate to fixed locations and hard facilities. We were trained and equipped for mobile command posts but when we arrived, I realized that we were not prepared to support the very large subscriber base external to the CPs of our four fixed FOBs. The peripheral equipment issued with the JNN-Network in terms of data cases, VoIP phones and also allocated IP addresses were not sufficient for this environment. We had to spend additional money on additional switches, Ethernet extenders, fiber components, etc. and a lot of man hours wiring it all together. I think that there needs to be some thought put into how we efficiently extend service outside of the CPs. I think we have begun to scratch the surface on wireless LAN implementation and I believe that a wireless/hardwired hybrid, provided the proper security measures are in place, can be a large part of how we do this.

'We have to remind folks often that we are using tactical assets, and they are not receiving service from a garrison Directorate of Information Management. That, to me, is the ultimate compliment.'

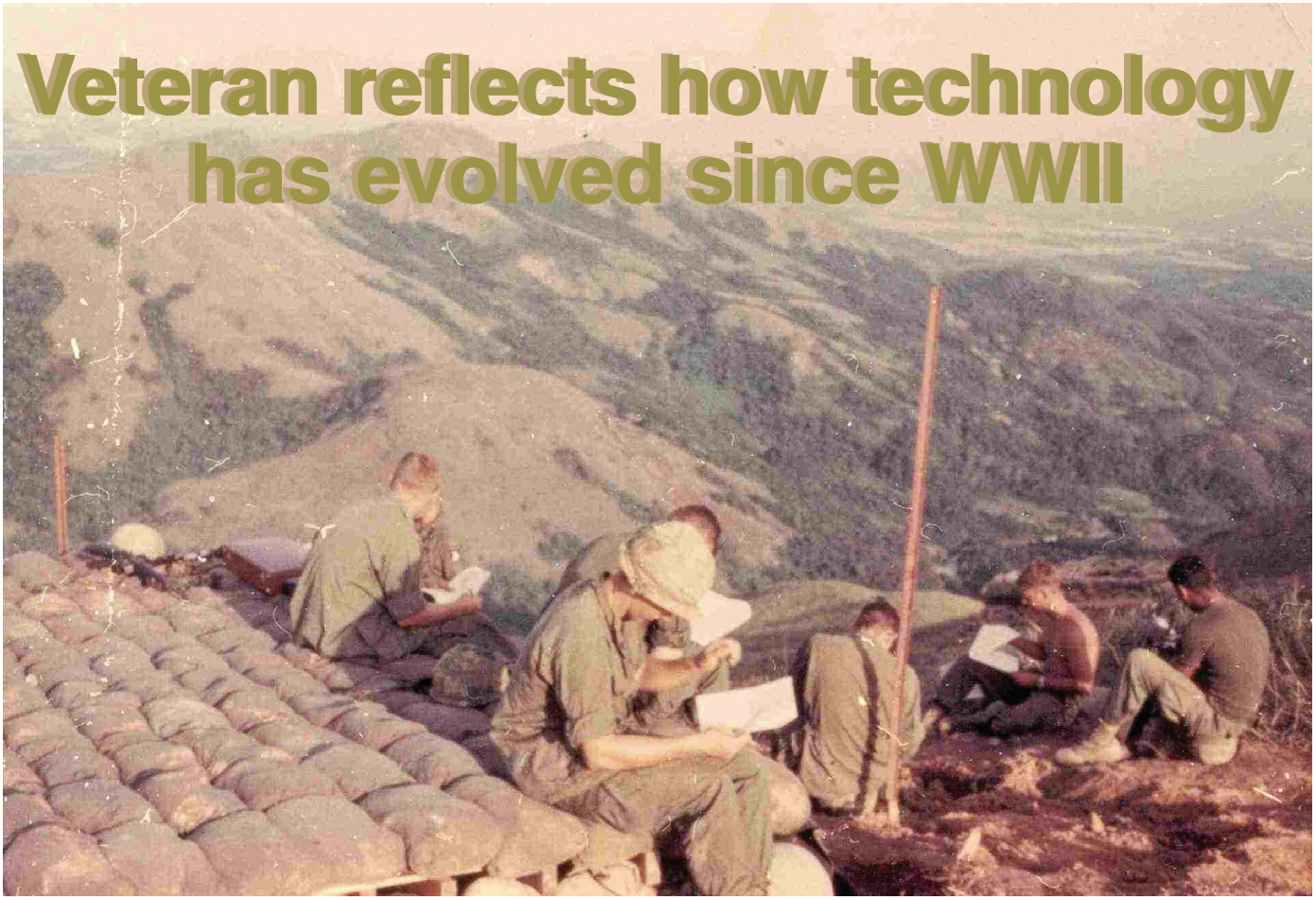
The only other comment I would make is to ensure that we maintain a means of redundancy to the Ku transmission paths. Establishing LOS links to our subordinate battalions with legacy MSE (TRC-190) LOS V1 and V3 shelters we kept prior to deployment proved invaluable. We were focused on keeping the LOS shelters as a solution to the problems units were having with the early version of CPOF. The software was not friendly to the latency [that is] unavoidable in satellite links. We were soon reminded that equipment will invariably fail, generators will accidentally run out of gas, etc. and the LOS links allowed us that level of redundancy to keep uninterrupted service going. That has ultimately saved lives. The huge capability achieved by moving to a satellite-based architecture is clear for a rapid moving force. As the tactical situation allows for LOS augmentation, I believe it is imperative to do so.

Nada Brackmann of Symbolic Systems, Inc. is an information/project manager supporting the Program Executive Office, Command Control and Communications Tactical Chief Information and Knowledge Management Office in Fort Monmouth, N.J.

Acronym QuickScan

4ID – 4th Infantry Division
ABCS – Army Battle Command Systems
HBCT – Brigade Combat Team
CIO/G6 – Chief Information Office
CP – Command Post
CPOF – Command Post of the Future
DOIM – Directorate of Information Management
FOB – Forward Operating Base
IP – Internet Protocol
JNN-N – Joint Network Node-Network
LAN – Local Area Network
LOS – Line-of-Sight
MCS – Maneuver Control System
MCS-L – Maneuver Control System-Light
MRE – Mission Rehearsal Exercise
MSE – Mobile Subscriber Equipment
NET – New Equipment Training
NIPR – Non-secure Internet Protocol Router
NTDR – Near Term Digital Radio
OIF – Operation Iraqi Freedom
S6 – Staff Communications Officer
SIPR – Secure Internet Protocol Router
WAN – Wide Area Network

Veteran reflects how technology has evolved since WWII



By Josh Davidson

It's safe to say that the technology that the Army provides to the Warfighter has grown by leaps and bounds since World War II.

Just ask Warren Cochrane, who served with Army's Signal Corps 85th Signal Operation Battalion during that war. Cochrane who worked mainly with telephones beginning in 1945, recalled how enemy Soldiers from Japan use to cut the telephone cables Americans set up for communications.

So, when laying wire Cochrane and his fellow troops would make sure they were placed between eight to 10 feet above the ground. If the wires were not placed high in the air, the Japanese would cut them and communications would be lost, he said.

Lacking the presence of telephone poles, Cochrane said he and his fellow Soldiers went to a Navy unit that had "four-by-four" boards. The boards were used to hang the cables in the air, to prevent the Japanese from cutting them, he said. The "four-by fours" were too slippery for the Japanese to climb, he said.

"We didn't even try to put (wires) on trees, because the Japanese would climb a tree and cut them," said Cochrane, 82, of Spring Lake Heights, N.J.

To climb a pole in those days, a Soldier didn't use the belts that are used by telephone company wiring experts today, he said. Instead, a Soldier would wrap his legs around it, so they could immediately jump down if they heard a shot, he said.

That's quite a difference from the communications equipment Team Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance provides today.

The satellite capabilities provided by the Joint Network Node-Network have made the wiring problems Cochrane faced a thing of the past. Through JNN-N, today's small platoon on the ground now has Internet capability at the quick halt and the ability to communicate with the rest of the world. The network capability it provides allows a commander to view the progress of his or her units from a far away location.

Cochrane's first World War II deployment was to Okinawa, Japan, in about 1945. He then traveled to Korea.

Cochrane received his schooling at Fort Monmouth, N.J., and was shipped overseas from Fort Bragg, N.C., after basic training. While overseas, Cochrane worked with the Army's 101st Airborne Division to support their maneuvers. Cochrane left the service in April 1946.

Maneuvering and finding one's way over seas was very tough, Cochrane said.

"When we arrived in Okinawa we didn't have any maps

Warren Cochrane, Signal Corps veteran, said that the few radios fielded to his unit were small walkie-talkies. Lack of radios was due to the fact that his unit specialized in telephones. Company headquarters officers used EE8A crank/ battery operated telephones.

really, because we landed at the same time as the Navy and we (stayed) with the landing boats," Cochrane said. "My outfit was about three or four miles apart on the beach. It was probably about two days before we all got together."

Often Soldiers would have to gather their information from other friendly troops, he said.

A Soldier mainly used his intuition to get from one location to the next, Cochrane said. Many times the Soldier would rely on the advice of other Soldiers and service men to decide which roads to take, he said.

Japanese Soldiers were not very visible during the day, because they hid in caves and in outlining woods, Cochrane said. Americans could tell the difference between friendlies and the enemy because the Japanese wore their own traditional Army uniforms, he said.

Today's Warfighter uses a system called Force XXI Battle Command, Brigade and Below to spot the whereabouts of other Soldiers on a map. FBCB2-BFT uses satellite technology to track and display friendly vehicles and aircraft that appear on a computer screen as blue icons over a topographical map or satellite image of the ground. Users can manually add red icons that show up as enemy on the screen and are simultaneously broadcast to all the other FBCB2 users on the battlefield. Other capabilities include creating, sending and displaying graphics such as bridges, minefields, obstacles, supply points and other battlefield hazards. Users can also send messages to each other similar to e-mail on the Internet.

The system is "ruggedized" to survive in any known battlefield environment and is used in platforms such as tanks, rotary wing aircraft, humvees, and command posts. Its network capability connects all of the FBCB2-BFT users together and tracks the locations of other platforms.

Cochrane said that the few radios fielded to his unit were small walkie-talkies. The lack of radios was due to the fact that his unit specialized in telephones. Company headquarters officers used EE8A crank and battery operated telephones much like those seen in Hollywood World War II movies.

Today, The Single-Channel Ground and Airborne Radio System provides commanders with a highly reliable, secure and easily maintained Combat Net Radio that includes the capability to handle both voice and data in support of command and control operations.

SINCGARS and Product Manager JNN-N are both within Project Manager Tactical Radio Communications Systems. PM TRCS and FBCB2-BFT are all within the Army's Program Executive Office for Command, Control, and Communications Tactical.

Cochrane was in charge of a group that set up wires to allow American Soldiers to hear a broadcast of the armistice being signed. An armistice is signed when warring parties agree to the effective end to a war. In this case, the Soldiers developed a way to monitor the broadcast and provide an alternate means of communication, in case the Japanese cut the connection cables, Cochrane said. This way, only a minor disruption would be experienced during the broadcast.

Cochrane said that many drastic changes in technology took place after he left the Army.

"It's improved very drastically, because when you can get on a radio-set to give direction on how to drop a bomb or torpedo or anything similar without (interference) from the enemy, you're doing pretty good," he said.

Cochrane remains involved with Info-age, a group whose mission includes preserving the heritage of Camp Evans.

Josh Davidson of Symbolic Systems, Inc. is a news writer supporting the Program Executive Office, Command, Control, Communications Tactical Chief Information Office in Fort Monmouth, N.J. He holds a Bachelor's Degree in Journalism/Professional Writing from the College of New Jersey (formerly Trenton State College). He previously worked as a municipal beat reporter for the Ocean County Observer, *a daily newspaper owned by Gannett Newspapers Inc. He has also written investigative and feature articles for many other publications.*

Acronym QuickScan

FBCB2-BFT – Force XXI Battle Command, Brigade and Below - Blue Force Tracking
JNN-N – Joint Network Node-Network
PM – Project Manager
SINCGARS – Single-Channel Ground and Airborne Radio System
TRCS – Tactical Radio Communications Systems

TSM update

Updates from Training and Doctrine Command systems managers for satellite communications, tactical radio and Warfighter Information Network-Tactical

TSM-WIN -T

Joint Node Network-Network

By MAJ Camilla Wood

The Joint Network Node - Network participated in an Initial Operational Test and Evaluation from May 19 to June 27, 2006 at the National Training Center, Fort Irwin, Calif., and at Fort Hood, Texas. The purpose of the test was to provide data to support the United States Army Evaluation Center in its evaluation of the JNN-Network capabilities.

The USAEC will use this data as input to a system evaluation report for a milestone C, full-rate production decision which is scheduled to occur in the near future.

The test was conducted in two phases; Phase 1 consisted of a Brigade Combat Team participating in a National Training Center rotation at Fort Irwin. Phase 2 included a Corps and Division Mission Readiness Exercise at Fort Hood.

During the IOTE the Signal Center provided extensive combat developer support to the test community, ensuring all aspects of Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel and Facilities were effectively addressed.

Signal Center personnel also actively participated in the IOTE Data Authentication Group activities which provide critical information in the development of the final test report.

The JNN-Network provides tactical communication to divisions, brigades, and battalions. It replaces the current mobile subscriber equipment.

JNN-Network is a mobile communications system that provides information technology hardware, software, and elements of network management.

The JNN-Network components are located at the division, brigade combat team, and battalion levels providing interfaces to lower-level systems, including on-the-move and Soldier platforms. Individual JNN-Network Brigade Combat Teams and battalions can operate autonomously from a division by direct connectivity to standardized tactical entry points, teleports, joint task force headquarters, and other joint forces communications systems. The JNN-N consists of three main subsystems:

A Unit Hub Node includes three Family of Medium Tactical Vehicles; two Time Division Multiple Access/Frequency Division Multiple Access Satellite Communications vehicles and a baseband vehicle.

A JNN is a shelter mounted on a HMMWV with transit cases and a Ku Satellite Transportable Trailer.

A Battalion Command Post Node includes transit cases and a Ku Satellite Transportable Trailer.

The Signal Center is fully involved in all aspects of the fielding of the JNN-Network systems as the Army converts to the modular force. JNN-Network resident training is ongoing at Fort Gordon with extensive hands-on use of embedded JNN-Network equipment. JNN-N doctrine is developed and available on the Fort Gordon website, and the Fort Gordon Battlelab is actively involved with provision and management of JNN Satellite network resources to support ongoing training and exercises in the Continental United States. Following the publishing of the Army Test Evaluation Command Test Report from the JNN-N Initial Operational Test and Evaluation the decision will be made regarding continued production and fielding to the force.

MAJ Wood is currently serving as an assistant TRADOC System Manager Warfighter Information Network – Tactical, at Fort Gordon, Ga. Wood, former Alpha Company, 122nd Signal Battalion, 2nd Infantry Division company commander, is currently assigned as the Joint Network Node-Network Program Lead.

Acronym QuickScan

ATEC – Army Test Evaluation Command
BCT – Brigade Combat Team
BnCPN – Battalion Command Post
CONUS – Continental United States
DAG – Data Authentication Group
DOTMLPF – Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, and Facilities
FDMA – Frequency Division Multiple Access
FMTV – Family of Medium Tactical Vehicles
IOTE – Initial Operational Test and Evaluation
JNN-N -- Joint Network Node-Network
MRX – Mission Readiness Exercise
NTC – National Training Center
SATCOM – satellite communications
SER – system evaluation report
STEP – standardized tactical entry points
STT – Satellite Transportable Trailer
TDMA – Time Division Multiple Access
UHN – Unit Hub Node
USAEC – United States Army Evaluation Center

Communications Validation

By MAJ Anthony Roper

These are critical times for our Army and for the Signal Regiment. We have validated the communications requirements within the Army and will soon receive joint validation by the end of this fiscal year.

The Training and Doctrine Command Systems Manager has begun writing doctrine and training plans for our Soldiers and leaders so our Army can continue to meet its global commitments as it transforms to better meet future challenges.

The key to this is the efforts to synchronize this effort with the Army Campaign Plan. Our key transformation task is building the network that will enable battle command of highly deployable and mobile modular forces that are increasingly reliant on information.

To give Warfighter Information Network-Tactical capabilities the time it needed to mature new technologies we believe the intermediate solution, Joint Network Node, will continue to provide capabilities.

The introduction of these interim capabilities gives us better capabilities than our present network. This allows us to provide better support to Soldiers and commanders faster. Following this path, fielding a totally new system all at once, we will introduce advanced WIN-T capabilities and components, such as Satellite Communications-on-the-Move and limited Network Operations, as they become available.

Over time, in an evolutionary manner, the network will become fully supported by WIN-T capabilities. As we proceed, we will synchronize WIN-T development with Army programs that depend on WIN-T capabilities, such as the Future Combat Systems program.

We're getting great support from senior Army leaders who clearly understand the value of what JNN and WIN-T will bring to the force.

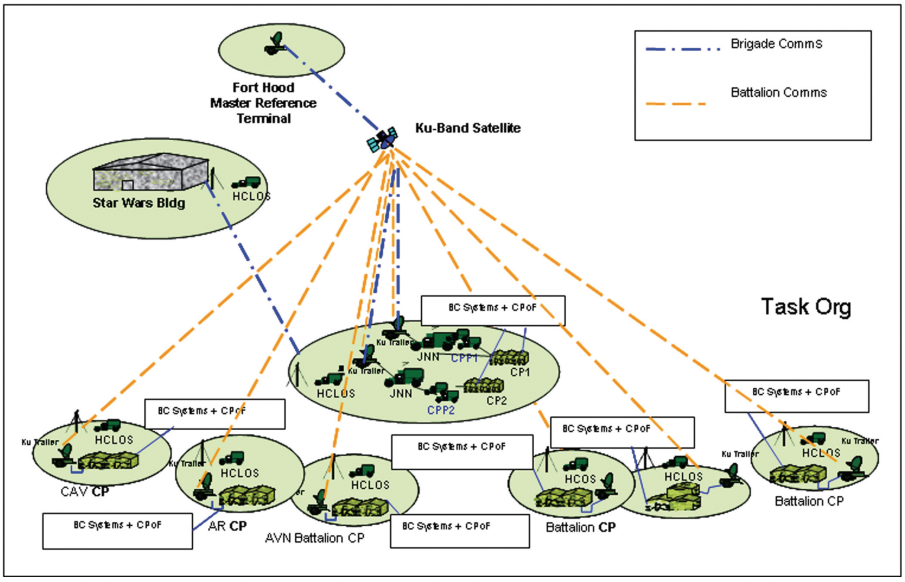
It is indeed an exciting time to be part of the Signal Regiment.

Tactical Baseband Vehicle

Satellite Transport Terminal Vehicle

JNN Shelter without Transit Cases

Ku STT Trailer



MAJ Roper is currently serving as an assistant TRADOC System Manager Warfighter Information Network – Tactical, at Fort Gordon, Ga. Roper is currently assigned as the Warfighter Information Network – Tactical Lead since 1994.

Acronym QuickScan

FCS – Future Combat Systems
FY – fiscal year
JNN – Joint Network Node
NETOPS – Network Operations
SATCOM – satellite communications
SOTM – SATCOM-on-the-Move
TRADOC – Training and Doctrine Command
TSM – TRADOC Systems Manager
WIN-T – Warfighter Information Network-Tactical

'A New Strategy' An Update on the Joint Network Management System

By Russell Benoit and Billy Rogers

Currently Joint Network Management System has been fielded to Detachment 1 of the 311th Theater Signal Command and the 335th TSC; the 3rd, 11th, 35th and 93rd Signal Brigades; and the 112th Special Operations Signal Battalion.

On March 17, 2006, the JNMS Milestone Decision Authority and the vice director, Joint Staff J6, agreed that a 60-day follow-on assessment of how joint networks are being planned and managed was necessary to help determine what, if any, changes needed to be made in the JNMS Program of Record to meet today's and future operational objectives.

Representatives from the Joint Staff/J6C, Product Manager, Network Operations -Current Force, and Training and Doctrine Systems Managers Warfighter Information Management-Tactical composed the survey team that conducted the follow-on analysis to collect and further refine empirical data. The team visited and interviewed or had teleconferences with several operational units and Combatant Command J6 staffs.

The results of the survey were briefed to the MDA and VDJ6 in May 2006 and the decision was made that a new strategy for the JNMS was required to meet changes in the joint operational environment. The services and the NetCentric Functional Capabilities Board were briefed by PdM NetOps in June 2006 and concurred with the new strategy.

The new strategy focuses on a software-only solution which retains the planning functionality but re-scopes the management capability. It also reduces the overall system footprint by implementing the JNMS software on laptop computers.

The next major JNMS software build effort is going to be developed with two incremental builds (Builds 1.4 and 1.5) in an effort to deliver additional enhancements/capabilities to the field earlier.

The Army's Test and Evaluation Command is planning on conducting independent government assessments to meet testing requirements for these incremental builds prior to their release to the field. Build 1.4 is projected for release in second quarter fiscal year 2007 with Build 1.5 following about six months later. The joint fielding plan is currently being revised to reflect the changes in what units will be getting which functionality (planning, management, or both) and when.

The Inter-Service Training Review Organization study that was conducted to determine the feasibility of consolidation all service's resident JNMS training at one location has now been approved be the Army and Air Force. Marine Corps approval is expected by mid-September. Once the study is approved, actions necessary to establish the joint school and resident training program not later than first quarter fiscal year 2008 will begin.

For further information on JNMS, contact Russell Benoit or Billy Rogers, TSM WIN-T, (706) 791-7501/2334, respectively. DSN prefix is 780. Email addresses are benoitr@gordon.army.mil or rogersb@gordon.army.mil.

Mr. Benoit is currently an Assistant TSM and Senior Telecommunications specialist for TSM WIN-T. Benoit has been working Network Operations and JNMS since 1997.

Mr. Rogers is a currently a Senior Systems Analyst with Femme Comp, Incorporated and provides TSM WIN-T with contract support services for the JNMS program. Rogers has been the primary TRADOC point of contact for the JNMS and has worked program issues with representatives of the Joint Staff, other services and agencies since the contract was awarded to Science Applications International Corporation in 2001. Rogers managed network management programs for the Defense Information Systems Agency prior to his retirement and also provided contract support services to TSM Network Management before its merger with TSM WIN-T in 2001.

Acronym QuickScan

ATEC – Army's Test and Evaluation Command
COCOM – Combatant Command
FY – fiscal year
ITRO – Inter-Service Training Review Organization
JNMS – Joint Network Management System
MDA – Milestone Decision Authority
PdM NetOps – Product Manager, Network Operations
TSC – Theater Signal Command
VDJ6 – vice director, Joint Staff J6

The Army Key Management System Update

By Allen Walton and Tim Kirkland

The Electronic Key Management System, a Department of Defense initiative, is operated by the National Security Agency, which was developed to enhance security and modernize the management and distribution of communication security material. EKMS provides an integrated end-to-end key management, COMSEC material generation and distribution, and logistics support capability for DoD and Civil Agencies. The Army implementation of the EKMS is through the Army Key Management System Program.

AKMS Updated Operational Requirements Document. The ORD was AROC approved with Joint Certification on May 26, 2006. This office continues working with all the program managers to capture Key Management requirements and ensure that these requirements will either be supported by AKMS and/or the planned Key Management Infrastructure.

System Subcomponents

Simple Key Loader

The AN/PYQ-10 SKL is a mission essential system that provides the Army communications network planner and end user with the means to handle, view, manage, store and load Signal Operating Instructions/ Electronic Protection data, and COMSEC keys. The SKL replaces the AN/CYZ-10 within the Army Key Management System. The goal is to field 50,000 SKLs to the force by 2010. Fielding is currently ongoing IAW the CY06 through CY08 fielding schedule.

Automated Communications Engineering Software

Approximately 520 workstations have been purchased under the five-year warranty and fielded based on the Modular Force Structure. The PdM is also developing ACES v1.8 software which will add the capability to support emerging requirements.

Local COMSEC Management Software

The Army has fielded 368 new workstations with LCMS 4.0.3.2 software. LCMS software 5.1 will be fielded when available but still needs to complete government testing (the Army will not field LCMS 5.0 except to pilot accounts). The new release date is late 2006.

Key Management Infrastructure

EKMS/AKMS will begin a transition to the DoD Key Management Infrastructure beginning in fiscal year 2008 timeframe. KMI is a critical foundation element for ensuring an adequate security posture for national security systems by providing transparent cryptographic capabilities consistent with operational imperatives and mission environments. The starting point for KMI will be to leverage EKMS Phase V capabilities as a baseline. New capabilities have been identified and will aid in a transformation from the current key management infrastructure to a new paradigm for key. This new paradigm will be via secured net-centric operations (e.g. Over-the-Net Keying). As the developer of KMI, NSA is responsible for developing a KMI transition plan in partnership with the Services.

New roles or naming paradigm that KMI will bring: (KMI Role – EKMS Role) Roles identified span all services.

- A Controlling Authority would have been
  - An EKMS CONAUTH
- A Command Authority would have been
  - (U//FOUO) An EKMS CONAUTH
- A Product Requestor would have been any or all of:
  - An EKMS CONAUTH, or
  - A User Representative, or
  - A COMSEC Custodian / COMSEC Manager
- A KOA Manager would have been
  - A COMSEC Custodian / COMSEC Manager
- A KOA Registration Manager (note: there will be a Personnel RM and an Equipment RM) would have been
  - An EKMS Registration Authority
- A Client Platform SSO would have been
  - A KOA Manager
  - Current local security personnel
- A KOA Agent would have been
  - A Local Element
  - A COMSEC Responsible Officer
  - A Hand Receipt Holder
- A Device Registration Manager would have been
  - A COMSEC Custodian / COMSEC Manager
- A Personnel Registration Manager would have been
  - An appropriate Security, Personnel, or Human Resources representative
- A Service/Agency Help Desk Manager would have been
  - A current EKMS help desk entity
- A Client Platform Administrator would have been
  - A current services local computer support entity

TSM WIN-T's point of contact for AKMS and KMI transition questions is Allen Walton (706) 791-2316/DSN 780-2316 or by email at waltona@gordon.army.mil and Tim Kirkland (706) 791-6623, email at Timothy.Kirkland1@us.army.mil.

Mr. Walton served in the U.S. Army for 30 years. He is currently employed by Engineering Solutions & Products, Inc. providing contractor support to the Training and Doctrine Command System Manager for the Warfighter Information Network – Tactical. Walton is the TSM Project Leader for the Army Key Management System, and has worked extensively in developing and documenting key management requirements in support of current and future DoD Information Systems.

Mr. Kirkland served in the U.S. Army as a custodian and network technician for more than 20 years. He is currently employed by Engineering Solutions and Products, Inc., providing contractor support to TRADOC as a liaison to the U.S. Army Signal Center addressing Information Assurance Capabilities. Mr. Kirkland works in support of Army tactical warfighter requirements at DoD and Department of the Army level working groups supporting Public Key Infrastructure, Key Management Infrastructure, and Information Assurance Component to the Global Information Grid and Portfolio management efforts.

Acronym QuickScan

ACES – Automated Communications Engineering Software
AKMS – Army Key Management System Program
AROC – Army Requirements Oversight Council
COMSEC – communication security
CONAUTH – Controlling Authority
CRO – COMSEC Responsible Officer
DoD – Department of Defense
E KMS – Electronic Key Management System
EP – Electronic Protection
KMI – Key Management Infrastructure
LCMS – Local COMSEC Management Software
LE – Local Element
NSA – National Security Agency
OTNK – Over-the-Net Keying
ORD – Operational Requirements Document
PdM – Product Manager
RA – Registration Authority
RM – Registration Manager
SKL – Simple Key Loader
SOI – Signal Operating Instructions
TRADOC – Training and Doctrine Command

Integrated System Control Update

By Ed Duffy

The Training and Doctrine Command Systems Manager Warfighter Information Networks-Tactical Network Operations staff is in the process of drafting a Capability Production Document that focuses on the Modular Force Increment required to mature the Integrated System Control family of systems network capabilities for network planning, management, and interoperability requirements.

The CPD describes the next incremental set of ISYSCON capabilities required to support the demands of the modular force. It takes into consideration and leverages a number of programs and concepts that are either already fielded or in development. As the Army's tactical network operating environment has steadily evolved to accommodate modularization and the gap between current force and future force needs, the ISYSCON management of network capabilities and interoperability requirements to support the force must equally adapt to the changed operating environment.

In compliance with the 2004, CSA Directive #2 - The Network Decision the ISYSCON Program was tailored to the "good enough" concept that was significant in defining the transformation of the Army to a Modular Fighting Force. The implementation of GE synchronized the ISYSCON with ABCS as a network enabler in the Army's operational transition to the Modular Force. Commensurate with the GE portion of the transition, some of the Army's existing tactical digitized Network Management problems were resolved by ISYSCON to support the warfighters' immediate technically achievable battlefield needs.

However, the ISYSCON network capabilities for Local Area Network management, Network Planning with its associated Network Initialization Capability and the requirement for joint interoperability to provide the warfighters at all levels of the Global Information Grid the right information, at the right place, at the right time were necessarily limited in order to achieve meeting the mandated GE and the Operation Enduring Freedom/ Operation Iraqi Freedom deployment schedules.

Subsequent operational assessments of network and data base products management show the GE solution has gaps and is less than adequate for the modular units given the nature of global conflicts and up-tempo operating environment.

The GE initiative represented the beginning of a major operational transition that continues to be assessed for changes to critical organizations and staffs that must communicate and coordinate. This CPD MFI is a result of reviewing and considering incremental changes to ISYSCON that compliment the CSA vision for increasing operational war fighting capabilities in the area of network capabilities and specifically the elements of network planning, network and data base management, LAN management and interoperability requirements for the Modular Force.

Based on the evolutionary development process stated in the ISYSCON Operational Requirements Document approved by the Joint Requirements Oversight Council in April 2005, the CPD outlines the needed Modular Force NM capabilities. It addresses data products and NM involving tactical network configuration and initialization capability development commensurate to provide the necessary functionality to perform on-demand dynamic battlefield unit task organization and reorganization for a 96-hour mission planning scenario and support the tenets of LandWarNet and Net Centric Warfare. It also describes the need for an overarching management of the Modular Force local area network Secure Internet Protocol Routing and Nonsecure Internet Protocol Routing networks to maintain crucial mission essential support data flowing during UTO/ UTRs. Additionally, the wide area network detailed network planning and engineering functionality requires adaptation to the Modular Force.

The target is to complete the CPD and have the document in the staffing process for upcoming Army program and systems reviews and discussions in the fall of 2006.

Mr. Duffy is a retired Army Signal Corps major and provides technical support for Madison Research Corporation contracts at Fort Gordon, Ga. His focus is on the definition of systems requirements and testing of automated communications network management for the modular force's battlefield information transport architecture. He is currently in direct support of the TRADOC Systems Manager Warfighter Information Network –Tactical in the area of network operations.

Acronym QuickScan

CPD – Capability Production Document
DPEM – detailed network planning and engineering
GE – good enough
GIG – Global Information Grid
ISYSCON – Integrated System Control
JROC – Joint Requirements Oversight Council
LAN – local area network
MFI – Modular Force Increment
NIPR – Non-secure Internet Protocol Routing
NM – Network Management
OEF – Operation Enduring Freedom
OIF – Operation Iraqi Freedom
ORD – Operational Requirements Document
SIPR – Secure Internet Protocol Routing
TSM WIN-T – TRADOC Systems Manager Warfighter Information Network-Tactical
UTO – unit task organization and reorganization
UTR – unit task organization
WAN – wide area network

TSM-Tactical Radio

JTRS and FCS
SYNCHRONIZATION

By COL Carole Best

What is JTRS? Why is it important?

Joint Tactical Radio System is the wireless communications capability that will provide the warfighter with new network capabilities and services delivered through the Global Information Grid. JTRS enables this capability through the use of advanced networking waveforms using mobile ad-hoc networking to link sensors, effectors, and command and control nodes throughout the battlespace. Transformation of the Department of Defense is dependent on linking these disparate network elements into a coherent, end-to-end architecture throughout the battlespace.

The JTRS radio systems along with their auxiliary capabilities such as network management, advanced networking waveforms, and networking services comprise the overall JTRS Program. Managed by Dennis Bauman and a host of joint service Program Managers and Product Managers, headquartered from the United States Navy's SPAWAR facilities in San Diego, the program has embarked on an incremental path that reduces risk to program cost and schedule while preserving critical requirements for the warfighter. Additionally, the program is charged with delivering the radio systems with the necessary security and information assurance capabilities to protect national security interests.

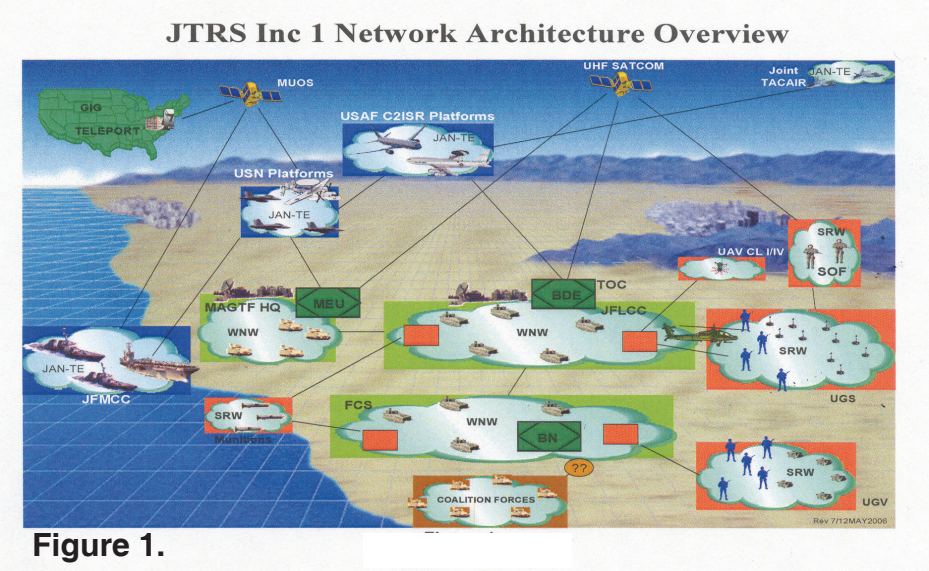


Figure 1.

There are three different domains of radios currently under development for the JTRS program. The Ground Mobile Radio consists of radios mounted on mobile platforms such as the Abrams, Bradley, and Stryker vehicles. The Handheld, Manpack, and Small-form-factor PdM is developing two channel handhelds and manpacks and a number of radios for dismounted Soldiers, small platforms, sensors, and weapons systems. Finally, the Airborne, Maritime, and Fixed Station PM is developing radios to support ships, aircraft, and fixed DoD facilities. These different programs are in various stages in the developmental process but will all use the common networking waveforms, management system and services.

How does JTRS fit into the transformation of DoD and the Army?

The FCS program will be the first program to widely use these new JTRS radio systems. FCS is developing a future, more capable, Brigade Combat Team from the ground up. This BCT will employ a series of manned and unmanned ground vehicles, unmanned air vehicles, unattended ground sensors, and munitions coupled with a network consisting of Battle Command capabilities, a Systems of Systems Common Operating Environment (providing services), and a transport layer that uses products from the Army's Warfighter Information Network-Tactical and the JTRS programs. In addition, the network uses common DoD standards and will be on each of the FCS platforms as well as current program platforms supporting the FCS BCT. (See Figure 2.)

The FCS program Future Brigade Combat Teams will field complete BCTs with these systems in the year 2016. In the interim, the program will conduct three spin outs of equipment to the current Force Heavy BCTs and Infantry BCTs. These spin outs are designed to use matured FCS technologies, in support of current, on-going operations. Spin outs will be fielded and tested in an Experimental BCT to be stationed at Fort Bliss, Texas. The EBCT will take the spin out products through all the testing and evalua-

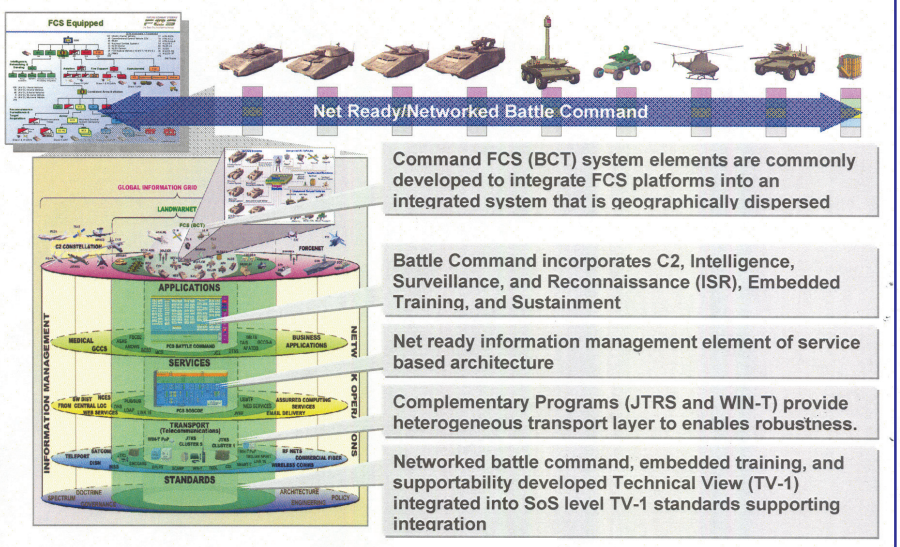


Figure 2

tion events leading to a production decision. The spin out products will then be fielded to designated current force units. Spin Out 1 incorporates munitions, sensors, early FCS Battle Command, and JTRS, GMR, and HMS radios.

The FCS and JTRS programs have conducted extensive collaboration over the past six months to establish synchronization milestones for the integration of various JTRS radio systems into FCS platforms. This was especially challenging for SO 1 because it is scheduled to field to current force units beginning in fiscal year 2010. COL (P) Tom Cole, deputy program manager FC5, leads the effort to synchronize schedules between the various programs. As the result of these efforts the SO 1 systems have a way ahead that uses JTRS and surrogate radios in the interim with migration plans to JTRS radios. Deliveries of pre-engineering development models of GMR radios have been made to the FCS program and are currently being used at the FCS Systems of Systems Integration Lab in Huntington Beach, Calif.

Where are we now?

FCS successfully completed its Interim Program Design Review in August and is on track for its Program Design Review in FY08.

The JTRS program is on track to deliver a transport capability with new networking waveforms to FCS. The program is working towards the delivery of current baseline capabilities while the TRADOC Systems Manager for Tactical Radios is now looking at the requirements to be included in the next JTRS increment.

Enhanced Position Location Reporting System

Land Warrior

In July, the Land Warrior ensemble incorporating the Enhanced Position Location Reporting System Microlight radio successfully completed an assessment of doctrine, organization, training, materiel, leader development, personnel, and facilities. Successful completion of the assessment paved the way for Limited User Testing at Fort Lewis, Wash., in September 2006.

The MicroLight 2nd Generation is a small-form factor, Internet Protocol-based data radio that hosts the EPLRS networking waveform. Also known as the Land Warrior Communication Network Radio Subsystem, the CNRS provides Type-l secure voice, data, and situation awareness for Land Warriors as well as a connection to the vehicular based Tactical Internet. National Security Agency certification for the CNRS is underway and expected later this year.

Benefits of a networking waveform realized

The benefits of a networking waveform were readily apparent during the Land Warrior assessment, where Soldiers could communicate and monitor one another's movements without connectivity via line-of-sight communications. This benefit was most apparent while training in heavily forested areas, inside buildings, and throughout urban terrain.

M3G industry initiative

In a collaborative Independent Research and Development venture, Raytheon and ITT are jointly developing the next generation of Microlight radios. The MicroLight 3 Generation will enter design verification testing in October of this year. M3G will retain all the capabilities of the CNRS. In addition, the M3G will host the Soldier Radio Waveform currently under development by Joint Executive Office for JTRS, operate over a wider frequency range, and reduce the number of cables required for operations via an integrated battery and Global Position System.

The M3G is intended for the dismounted domain. It will be offered alongside a sister radio intended for the vehicular domain, collocated with a single-channel ground-to-air radio system Advanced System Improvement Program-Enhanced and projected to provide the dismounted-to-mounted communications link lacking in the lower tactical Internet today.

COL Best is a native of Beaufort, S.C. She earned a Bachelor of Science degree in social studies in 1975 from Fayetteville State University, a Master of Science degree in systems management from the University of Southern California in 1989 and a Master of Science Degree in national security and strategy from the Army War College in 2001. She completed Command and

General Staff College in 1993 and the Armed Forces Staff College in 1995. She entered the Army in 1980 and was commissioned upon graduation from Officer Candidate School, Fort Benning, Ga., in March 1981.

After completing the basic communications-electronics course at Fort Gordon, Ga., Best was assigned as the executive officer, Officer Student Company, Second Signal Training Brigade, Fort Gordon. In September 1982 she was reassigned as platoon leader, Company B, 67th Signal Battalion and later served as signal operations platoon leader and executive officer, headquarters company, in the same battalion. Best was assigned to the 93rd Signal Brigade, Ludwigsburg, Germany, in June 1985. While there, she served successively as assistant operations officer and commander, Company C, 34th Signal Battalion. Other assignments in her career include: assistant brigade operations officer, 1101st Signal Brigade, Fort McNair, Washington, D.C.; commander, Satellite Communications Station, Camp Roberts, Calif.; project officer and deputy program manager, Defense Information Systems Agency, Washington, D.C., and commander, 1st Satellite Control Battalion, Army Space Command, Colorado Springs, Colo. Best is currently assigned as the chief, Strategy and Technology Applications Branch, U.S. Strategic Command, Colorado Springs, Colo.

Acronym QuickScan

AMF - Airborne, Maritime, and Fixed Station
ASIP-E - Advanced System Improvement Program
BCT - Brigade Combat Team
CNRS - Communication Network Radio System
DoD - Department of Defense
EBCT - Experimental Brigade Combat Team
EPLRS - Enhanced Position Reporting System
FBCT - FCS Brigade Combat Team
FCS - Future Combat System
FY - fiscal year
GMR - Ground Mobile Radio
HMS - Handheld, Manpack, and Small-form-factor
JTRS - Joint Tactical Radio System
M3G - MicroLight 3rd Generation
PdM - Product Manager
PM - Program Manager
SINCGARS - singled-channel ground-to-air radio system
SPAWAR - Space and Naval Warfare Command
SO - spin out
SRW - Soldier Radio Waveform
TRADOC - Training and Doctrine Command
TSM-TR - TRADOC Systems Manager-Tactical Radios
U.S. - United States
WIN-T - Warfighter Information Network-Tactical

Doctrine update

Updates in Signal doctrine from Directorate of Combat Developments, Army Signal Center, Fort Gordon, Ga.

New Signal doctrine manuals approved

Field Manual Interim 6-02.60, Tactics, Techniques, and Procedures for the Joint Network Node-Network

By Rick San Miguel

Stryker Brigade Combat Teams introduced the early stages of modular capabilities in the late 90s. The Army has begun a major transformation to the approved modular force design construct. Under this new modular design the Signal Corps had to restructure all Signal organizations and the Signal support (equipment and personnel) they provide to the total force. The current legacy mobile subscriber equipment could not support the data requirements of the new modular force design. Units required more satellite based communications and MSE was unable to cover the terrain or increased bandwidth demand required by this new modular capability.

The Joint Network Node-Network was introduced as an interim solution to replace MSE and support the transition to the objective capabilities of Warfighter information network–tactical. Currently, JNN-N is paying huge dividends in all aspects of communications and network operations as an interim solution to the WIN-T capabilities.

JNN provides an increase in available bandwidth of 8Mbs, secure internet protocol router and non-secure internet protocol router, to video teleconferencing. It enables both circuit switching and internet protocol-based networking. It is interoperable with MSE through the Vantage switch providing a seamless interface between Voice over IP and tactical networks through the use of two dedicated MSE trunks. The JNN-N package is mobile and provides the required services to the brigade combat team commander.

Field manual interim 6-02.60 is a new doctrinal manual that provides the tactics, techniques, and procedures for the JNN-N in the pre-deployment, deployment planning, and management to support military operations and training. The scope of this manual includes descriptions of the JNN-N components and their functions, applications, procedures, planning, management, and maintenance providing a user reference guide to support the deployment and operation of the JNN-N in support of the digitized modular force.

NOTE: An FMI is a new Department of the Army publication in accordance with TRADOC Regulation 25-36 that provides expedited delivery of urgently needed doctrine the proponent has approved for use without placing it through the standard development process. FMIs usually contain TTP, but may contain discussions of principles. Unless an FMI is rescinded, information it disseminates is incorporated into a new or revised FM. FMI's expire after two years, unless superseded or rescinded.

Mr. San Miguel is a Department of the Army civilian and presently holds a position of Signal doctrine writer, Concepts and Doctrine Division, Directorate of Combat Developments, U.S. Army Signal Center, Fort Gordon, Ga. His background spans 30 years of service to the Signal Regiment.

Acronym QuickScan

DA – Department of the Army
FMI – field manual interim
IAW – In accordance with
JNN-N – Joint Network Node-Network
MSE – Mobile subscriber equipment
SBCT – Stryker Brigade Combat Teams
TRADOC – Training and Doctrine Command
TR – TRADOC Regulation
TTPs –Tactics, Techniques, and Procedures
VOIP – Voice over IP
WIN-T – Warfighter information network–tactical

Field Manual Interim 6-02.70, Army Electromagnetic Spectrum Management Operations

By Shawn P. Sweeney

Spectrum management is an area that has become increasingly important as modularity unfolds yet is not well understood by most Soldiers. For the dismounted Soldier on an urban patrol or the convoy providing much needed fuel or supplies the radio link is, many times, the only way to contact support when needed. Radio frequency spectrum also provides the conduit for commanders to maintain situational awareness through Army Battle Command Systems such as Force XXI Battle Command Brigade and Below better known as FBCB2.

In order to address the doctrinal concerns of the rapid changes brought forth by modularity the Signal Center has been busy updating its doctrine. One of the latest publications from the Signal Center is FMI 6-02.70, Army Electromagnetic Spectrum Management Operations.

Within the next two years this FMI will evolve to a FM. There are still a few areas such as tactics, techniques, and procedures for the use of spectrum analyzers currently being fielded to deployed units and the relationship between spectrum management and electronic warfare that need to be sorted out before the FM can be published.

FMI 6-02.70, Army Electromagnetic Spectrum Management Operations, replaces The Army Spectrum Management field manual (FM 24-2) which was last published in 1992 and had not significantly changed since 1987. Since that time there has been an exponential growth of emitters used in operations. No longer is the spectrum manager concerned with only communications systems but also unmanned aerial systems, munitions, robots, and a variety of sensors to name a few. Besides the enormous increase of friendly emitters the Army finds itself combating a foe that prefers asymmetrical operations using electromagnetic devices to trigger explosives. This has led to the development of a variety of portable radio frequency jammers, which challenge the availability of usable spectrum.

FMI 6-02.70 provides direction and guidance for managing spectrum throughout the strategic, operational, and tactical levels of war. The FMI provides overviews of the international, national, DOD, and joint levels of spectrum management. The FMI discusses the role of the tactical spectrum manager from brigade combat team to corps to include determining requirements, the request process, EW, and interference resolution.

This manual is a totally fresh re-write and uses very little from the previous manual. Many of the manual processes described in the old manual such as multi-channel radio link assignments have been deleted because software programs have replaced them. Also many of the agencies and organizations referred to in the superseded manual either no longer exist or have been reorganized and renamed.

Another significant change in the new manual is a chapter on installation frequency coordination. This chapter was developed to address the installation commander's responsibilities concerning frequency coordination on the installation. Tactical spectrum managers engaged in establishing garrison type services in a sustaining base environment will also find this chapter useful. In the context of homeland defense issues this chapter provides information concerning approaches to interoperability between military and civilian users.

Due to the complexity of the subject matter the primary audience for this FMI is the spectrum manager. The FMI does, however, provide enough of a general overview to acquaint all readers to spectrum management organization, processes, and functions.

In order to make doctrine user friendly and less redundant the Combined Arms Doctrine Directorate at Fort Leavenworth has given guidance that doctrine should be concise and avoid duplicating material found in other publications. Based on this guidance FMI 6-02.70 provides more references to other publications than FM 24-2 did and contains fewer appendices, which keep the total length of the manual to fewer than 70 pages.

This new FMI, along with advances in other doctrine, organization, training, materiel, leadership development, personnel, and facilities areas will help spectrum managers in day to day operations as well as all phases of deployment.

Mr. Sweeney is a retired Army first sergeant and served in a variety of assignments including division spectrum manager, first sergeant, and non-commissioned officer-in-charge of the Battlefield Spectrum Management Course. He is a Department of the Army civilian working in the Concepts and Doctrine Division of the Signal Center's Directorate of Combat Developments and holds a Master of Science degree in business from Troy University.

Editor'sNote:

We encourage you to contact us and provide feedback on the doctrine products we are developing. We must ensure that our doctrine remains relevant during the transformation process.

You can contact us via E-mail at doctrine@gordon.army.mil, or signal.doctrine@us.army.mil, or by phone at DSN 780-6506 or commercial at (706) 791-6506. You can access these documents on AKO through this URL https://www.us.army.mil/suite/folder/508671 or at http://www.gordon.army.mil/doctrine.

Acronym QuickScan

DOTMLPF – doctrine, organization, training, materiel, leadership development, personnel, and facilities
DOD – Department of Defense
EW – electronic warfare
FBCB2 – Force XXI Battle Command Brigade and Below
FM – field manual
FMI – field manual interim

Circuit check

News and trends of interest to the Signal Regiment

NEWS

World-Wide Satellite Systems contract awarded, will support all federal communications missions

By Stephen Larsen

FORT MONMOUTH, N.J. – Federal agencies – both Department of Defense and non-DoD – requiring commercial satellite terminals and associated services may now order from the World-Wide Satellite Systems contract, which the Army awarded to six vendors on Aug. 29.

The six vendors include two large businesses: the Boeing Company of Anaheim, Calif.; and General Dynamics Satellite Communications Technologies of Duluth, Ga.; and four small businesses: DataPath of Duluth, Ga.; D&SCI of Eatontown, N.J.; Globecomm Systems of Hauppauge, N.Y.; and TeleCommunications Systems of Annapolis, Md.

Under the terms of the firm-fixed price, indefinite delivery/indefinite quantity contract, which was developed under a partnership of the Project Manager, Defense Communications and Army Transmission Systems, and the Project Manager, Warfighter Information Network-Tactical, and which has a multi-billion dollar ceiling over a term of five years, each vendor will be required to provide comprehensive turn-key solutions – from satellite communications systems hardware to operations services to logistics support – for a myriad of commercial satellite terminal configurations. Depending on user requirements, these systems may be operated on any military or commercial satellite in the C, Ku, X and Ka bands.

Army officials expect WWSS products and services will support all federal communications missions, including disaster relief and homeland security efforts.

Federal agencies – both Department of Defense and non-DoD – requiring commercial satellite terminals and associated services may now order from the World-Wide Satellite Systems contract. Shown here are fixed-station Teleport terminals.

"Customers in the U.S. military and other federal agencies, in support of a natural disaster, will be able to order what they need, when they need it," said Kevin Carroll, the U.S. Army's Program Executive Officer, Enterprise Information Systems. "Customers don't have to be SATCOM or acquisition experts either, as our staff will be available to provide both SATCOM and acquisition assistance if customers need this."

Streamlined execution of delivery orders

"We've already come across potential WWSS customers who don't have the technical expertise or the acquisition expertise, so we'll assist them," echoed Scott A. Mathews, WWSS project leader for the PEO EIS' Project Manager, Defense Communications and Army Transmission Systems/Product Manager Defense-Wide Transmission Systems. "We've developed a streamlined delivery order process within the PM DWTS WWSS project office to help customers convert their validated requirements into a request for a task execution plan, which the contracting officer will forward to each of the six vendors."

Once a vendor receives an RTEP, Mathews said, they must notify the government within seven calendar days whether they intend to bid and if so, they must submit their proposal to the government in the form of a task execution plan within 14 calendar days.

"Our goal is to provide best-value solutions to customers in an efficient and expeditious manner," said Mathews, adding that using WWSS will save customers "significant" time and money over having to award individual contracts to meet their requirements.

Army officials expect World-Wide Satellite Systems products and services will support all federal communications missions, including disaster relief and homeland security efforts. Shown here, Ken Scott (right) of the Product Manager, Defense Wide Transmission Systems trains National Guard Soldiers to set up and operate a Combat Service Support Very Small Aperture Terminal .

"Customers don't have to prepare and staff acquisition plans, conduct industry days or convene source selection evaluation boards," said Mathews. "We've already done the bulk of the work for them by pre-qualifying six industry vendors."

Mathews said PM DWTS' WWSS project office intends to get the word out about how the WWSS contract can help federal agencies at upcoming trade shows, starting with the Association of the U.S. Army annual meeting in Washington, D.C., from Oct. 9 – 11, where WWSS information was available at the PEO EIS booth. Meanwhile, Mathews said, potential customers can get more information about the WWWS contract by sending him an e-mail at scott.a.mathews@us.army.mil or by phone at (732) 532-2339.

Mr. Larsen is with Program Manager, Defense Communications and Army Transmission Systems at Fort Monmouth, N.J.

LOGISTICIAN'S RECOMMENDATIONS SAVE NEARLY $23 MILLION IN MILSATCOM TERMINAL LIFE CYCLE COSTS

By Stephen Larsen

FORT MONMOUTH, N.J. - Keeping the United States inventory of military satellite communications terminals up-to-date and running is sort of like painting a bridge. By the time you get to the end, it's time to start all over again.

Consider that there are hundreds of MILSATCOM terminals fielded at locations all around the world, in types and sizes ranging from eight-foot or 20-foot diameter AN/TSC-86s, to 38-foot diameter AN/GSC-39s and AN/GSC-52s, to 60-foot diameter AN/FSC-78s. And some of these are at hard-to-each locations, such as Shemya Island, Alaska, far out in the 50 mile-per-hour fog near the western tip of the Aleutian Islands, or Diego Garcia, a narrow tropical jungle reef out in the Indian Ocean.

"Given that all DoD services use these terminals, which means different logistics systems, the worldwide locations, which means different logistics strategies, and the diversity of terminals, which means different components and logistics issues, you really need someone good to oversee the logistics support to all these terminals," said Jay Hicks, chief of the technical management division of the Project Manager, Defense Communications and Transmission Systems. "For PM DCATS, that person is Mike Jackson."

Jackson is PM DCATS' director for readiness – but don't let the title lull you into thinking Jackson sits behind a cushy desk barking out orders to a bevy of subordinates. Jackson keeps his suitcase ready, as he is constantly on the road, travelling to worldwide MILSATCOM sites so he can head off logistics support issues before they become problems.

Plugging a logistical leak

A case in point: In late 2005, Jackson noticed the logistical trend that key components of AS-3199 antennas were requiring unacceptably high levels of maintenance. These antennas provide long-haul reachback communications supporting strategic, restoral terminal, contingency and classified missions in strategic MILSATCOM terminal systems, including the AN/TSC-86C, AN/TSC-86D, AN/TSC-86E, AN/GSC-49, AN/GSC-52A(V)5 and AN/GSC-52A(V)6.

However, leaks were occurring in the AS-3199s' antenna feed assemblies and other components, allowing moisture to corrode parts inside, to the point that the feeds needed to be entirely refurbished every three years, at a cost of $100,000 each. Seals were also breaking on junction boxes and data boxes, allowing moisture to corrode parts inside and requiring that 10 junction boxes and 20 data boxes be totally replaced, at a cost of $5,000 each.

"One of the biggest maintenance concerns with fixed-site

Logistician Mike Jackson (left) and technician Ric Budgeon check junction box components under an AN/TSC-86X satellite terminal at Tobyhanna, Pa. Army Depot.

Logistician Mike Jackson (right) and technicians Bob Petrone (right) and Ric Budgeon (center) are shown beneath an AN/TSC-86X satellite terminal with technician Bob Petrone at Tobyhanna, Pa. Army Depot.

satellite terminal systems is to keep the system free of moisture," said Jackson. This is done, he explained, by the antenna's dehydrator, which provides pressurized air on the components to keep them free of moisture.

The leaks and seal damage with the AS-3199s' were occurring because the system's 30-year-old technology dehydrator was overpressurizing the system. The leaks caused the compressor to run constantly, requiring more preventive and corrective maintenance on the dehydrator. The preventive maintenance needed to be performed yearly at a cost of $2,000 per year.

"Basically, any amount of pressure over zero psi (pounds per square inch) is sufficient to keep components pressurized, and dry," said Jackson. "But the compressors being used with the AS-3199s were overpressurizing at 1.2 psi, which was breaking the seals and causing a vicious cycle of maintenance issues."

Jackson did the math. Currently, PM DCATS has fielded and provides logistics support for six MILSATCOM systems employing AS-3199 antennas. This figure will increase to 17 systems as PM DCATS fields more AS-3199 antennas over the next few years. If this trend were to continue through the 15-year life cycle of the 17 AS-3199s PM DCATS will field, Jackson estimated it would cost $12.3 million to maintain the current dehydrators and refurbish or replace the components they caused to fail.

In January 2006, Jackson tasked Harris Corp. to conduct a trade study to consider commercial-off-the-shelf alternatives to replace the 30-year-old technology dehydrator units in current use. Over the next several months, Harris evaluated the range of dehydrators on the market and in May 2006 presented their findings to PM DCATS. Jackson reviewed the findings and by early June recommended that PM DCATS replace the current dehydrator with the Andrews model ID2300, which employs up-to-date technology, uses less power, operates more efficiently and will make it easier to get parts, and thus will reduce operation and maintenance time and costs. It also reduces the air pressure more than 50 percent from the current 1.2 psi to 0.5 psi, which will be sufficient to keep the components pressurized and dry, but will not cause cascading maintenance problems as the current dehydrator does by breaking seals on the antenna feed assembly, junction boxes and data boxes. The new dehydrator also has a large tank assembly, which will reduce compressor wear, and thus reduce maintenance costs.

Jackson estimates that it will cost $75,000 to acquire the new dehydrators, $48,000 to install them and $683,000 to provide training, parts and documentation over the

life cycle of the total 17 AS-3199s PM DCATS will field. This represents a life-cycle cost savings of $11.5 million over the $12.3 million it would cost to maintain the current dehydrators and refurbish or replace the components they caused to fail.

"Reversing this logistical trend will not only save the Department of Defense $11.5 million over the life cycle of the antenna system," noted Art Reiff, the deputy PM DCATS, "but will help ensure the continuation of long-haul reachback communications supporting key strategic, restoral terminal, contingency and classified missions."

Reiff said that earlier in 2005, Jackson helped to gave the government an additional $11.25 million in life cycle costs in supporting AN/GSC-52 medium-size (38-foot diameter) MILSATCOM terminals when he teamed with Gerald Christophe, PM DCATS' project leader for AN/GSC-52 Modernization Program to recommend to the Defense Information Systems Agency that instead of seeking funding for 600 additional single-carrier converters, that they instead implement X-Band block converters at Department of Defense Teleport and Standardized Tactical Entry Point sites and Auxiliary Satellite Communications Terminal sites.

In addition to saving $11.25 million, Reiff said, that recommendation to use block converters also offered a number of other advantages – it provides compatibility with industry, which is moving away from use of single-carrier converters, it will reduce the number of converters needed from nearly 4,000 to 210, support higher data rates, decrease the logistics footprint from 13 racks to 2 racks per converter, and decrease the acquisition cost from $15.6 million to $9 million.

Respected by superiors, peers and subordinates

"Mike is invaluable to the organization," said Reiff. "Based on his years of experience, he knows every aspect of the logistics support system – but more importantly, he knows how to work within the system to get things done. He is dedicated, puts in an enormous number of hours and gets along with all of his peers and subordinates. He has a great working relationship with all of the organizations he deals with – and that's a tremendous benefit to PM DCATS."

"For a logistician, Mike is phenomenal, he knows the equipment better than many engineers," said Stan Schmidt, a PM DCATS engineer. But Schmidt is equally impressed by Jackson's personal and team-building skills. "He deals equally well with all levels of people from users at the site to Commanders," said Schmidt. "He makes sure things get done, but he doesn't do this in a demanding way, he does it in a way that shows confidence is us. He doesn't tell you how to do things, he just tells you what needs to be done."

Logistician Joan Welch, who works for Jackson, concurs.

"Mike is a mentor, the best supervisor I've ever worked for," said Welch. "He commands a tremendous amount of respect because of his work ethic, dedication, and commitment. He has tremendous rapport with the personnel at the user sites, they all know Mike on a first-name basis and all respect him. He's very human and approachable, he doesn't sit in an ivory tower, and he cares deeply about the Soldier, these programs and his people – he cares, so he inspires other to care. He motivates you by example, to really want to go the extra mile not only for the Soldier and the programs, but for him, to do whatever you can to make the program a success."

All in all, it adds up to million of dollars in savings for the government and better support to the Warfighter.

"When I get a tasker from Mike," said Schmidt, "it goes right to the top of my priority list – I want to see him and the program exceed. The bottom line is, if it weren't for Mike, I don't think our programs would be in as good shape as they are."

Mr. Larsen is with Program Manager, Defense Communications and Army Transmission Systems at Fort Monmouth, N.J.

324TH FIGHTING PHOENIX ACTIVATED

By CPT Michael V. Bush

On June 16, 2005, the 4th Infantry Division, Fort Hood, Texas, activated its newest Network Support Company under the 4th Fires Brigade, the first Fires Brigade unit ever formed in the history of the United Stated Army. Designated as the 324th NSC, the new unit adopted the name Phoenix Company from the historical reference of the previous unit's activations and deactivations under the same name. 324th NSC was formed under the Army's new modular Unit of Action design.

Task organized under the 4th Fires Brigade as a separate company, 324th NSC functions as a separate entity from a battalion size element. The company's mission is to provide 24-hour operations supporting the Fires Brigade communications network. Soldiers in 324th NSC are primarily responsible for engineering, installing, operating, maintaining, and defending the Joint Enterprise theater network supporting operations of the 4th Fires Brigade, 4th Infantry Division, and Coalition Forces Land Component Command.

In the initial phase of the unit's activation in January 2005, there was no equipment, no personnel, and no designated company headquarters. Basically the unit only existed on paper, and in the mind of the 4th Fires Brigade Commander COL Allen W. Batschelet. On Jan. 25, 2005, the 324th NSC became a reality when I, CPT Michael V. Bush, was assigned to the unit as the company commander of the 324th NSC. As the company commander, I was handed assumption of command orders and instructed by the brigade commander to, "…build me a Signal unit the Fires Brigade can be proud of."

With those instructions I recruited the best and brightest Signal Soldiers from Forts Hood and Gordon.

Within the first six months of the unit development there was only one junior non-commissioned officer to lead and develop the unit's

WO1 Paul Gonzalez and SPC Floyd Telford work in a Line of Sight transmission to improve the bandwidth of the Battalion Command Post Node.

standards, SGT (P) Alvin Brown, and twelve new privates assigned to the 324th NSC. Working with the Soldiers and resources available, I delegated all of the additional duties an E-7 or above would fulfill to privates. Under my guidance and careful watch, these Soldiers established all of the company commodity shops, higher-level accounts including: ammunition accounts and supply accounts. This unit was truly built by the outstanding Soldiers who are assigned to it.

In February 2005, the unit's First Sergeant, SFC(P) Allen Braswell, arrived at Fort Hood with no idea he would lead one of the finest Signal units in the U.S. Army. Braswell was also the Advanced Individual Training senior drill sergeant for most of the Soldiers in the unit. They knew the respect Braswell commanded and were aware of his expectation of excellence in all tasks. Once Braswell reported to the Fires Brigade he was frocked as a first sergeant and assigned to the 324th NSC. Under his care, Soldiers of the 324th NSC became highly trained, disciplined, and battle-focused.

Together we developed the unit's mission essential task list and mission. It was a challenge developing a METL and mission for my unit because it was the first time a unit of its kind was designed. Once METL and mission were approved by the Brigade Commander the we immediately set the unit on a path that would take the unit into deployment to Operation Iraqi Freedom 05-07. According to deployment timeline we had only three months to do it.

As a result of the guidance from the first sergeant and myself and the tremendous efforts of the Soldiers of the 324th NSC, the unit received numerous accolades from the Fires Brigade Commander COL Allen W. Batschelet, the Assistant Deputy Commander (Support) BG David Halverson, and the Commanding General of 4th Infantry Division MG James Thurman. These awards include, but are not limited to: Division Commander's Safety streamer, the ADC(S) Maintenance Excellence Award (four times), and the Commanders Cup. 324th has won numerous maintenance awards from the 4th Infantry Division ADC(S) due to the Soldiers discipline and attention to detail in the area of maintenance. Maintenance of M1114 gun trucks is critical to the survival of Soldiers in theater who travel the roads of Iraq daily.

324th NSC was activated on June 16, 2005, in a ceremony held at Fort Hood, Texas. The unit's activation was held in conjunction with the activation of the 589th Brigade Support Battalion which herald in the completion of the 4th Fires

CPT Michael Bush and 1SG Allen Braswell, the command team of 324th Network Signal Company pose with confidence next their Command Post.

SGTs Jeffery Gibbon and Randy Shilton conduct pre-combat checks on communications system inside the M1114 assault vehicle. Checks are vital to any mission's success. Many scenarios can happen during combat patrols.

Brigade, 4ID. The ceremony marked the activation of the U.S. Army's first ever Fires Brigade unit. It was a historic event for the U.S. Army because it was the first time that an Army Division was completely formed under the new Modular Design.

Dec. 3, 2006, 324th NSC deployed to Iraq in support of OIF 05-07. Currently stationed at Forward Operating Base Liberty, the unit supports full-spectrum operations in various locations around the country. Their missions require the Signal Soldier to be able to engineer, install, operate, maintain, and defend the JNTC network mesh against both physical threats and enemy electronic-countermeasure threats. Today's U.S. Army Signal Soldiers operate some of the most sophisticated network communications equipment in the world. Whether it is commercial-off-the-shelf technology, or tactical network encryption equipment, the Signal Soldier of today's Army is leading the way for U.S. military war fighter.

The Soldiers of 324th NSC currently provide signal support to maneuver elements across Iraq within the Multi-National Division – Baghdad, Multi-National Division – North, Multi-National Division – West, and Multi-National Corps-Iraq in support of Operation Iraqi Freedom 05-07. To date 324th NSC has logged a total of 2300 mi in combat patrol hours traveling across Iraq as it provides Signal support to the theater. The Soldiers are highly trained in combat patrol tactics, combat life-saving skills, and small arms weapons. They use this training on a daily basis either training for or executing Ground Assault Convoys. The skill to understand, prepare, and execute a Ground Assault Convoy at a moment's notice is critical for all deployed Soldiers.

The elite leaders and Soldiers of the 324th Network Signal Company built a unit that not only has expertise to execute Signal support missions, but one that is disciplined, highly trained, and tough enough to sustain in combat.

The Fires Brigade Modified Table of Organization & Equipment is undergoing a drastic change in the near future. Plans are in development to change the traditional structure of the Signal company to a more rapidly deployable unit. The unit will support five battalion elements, as well as, the brigade. These plans are still in development and await approval from the Department of the Army.

CPT Bush is the commanding officer of 324th Network Signal Company, currently deployed to Iraq. His first duty station was with 1-503rd Infantry Battalion, Camp Casey in South Korea as an anti-tank platoon leader. He served as a light infantry executive officer, a 2-20 FA Signal officer, a Signal officer with the 64th CSG Brigade.

(Left) During a Relief in Place mission, Soldiers assume control of operations from another unit. Here Soldiers replace a Band III antenna for the Battalion Command Post Node. L to R: SGT Tonja Hodges, SPC James McCoy, and PFC Kalisha Grant.

324TH ITSB
PRE-DEPLOYMENT TRAINING CRITICAL

By CPT Greg Majewski

Newly formed sweat gently falls from his forehead. Eyes focus. Senses heighten. Hands firmly grip his weapon, scanning for possible enemy. The summer sun beats down from above. The extreme heat can sometimes play havoc with ones head, but the mission comes first. His teammates quickly move into position against a wall behind him. They move as one, they move as a team, always aware that their next move could bring enemy fire.

But then the command comes. "No not like that, you need to watch his six, remember to move forward but always watch where you have come from," says the instructor. Today it's only close quarters combat training on Fort Hood, Texas, but soon it could be the real thing.

It's not a task Soldiers from the 324th Integrated Theater Signal Battalion are usually accustomed to, but it's something every Soldier, no matter their job, may have to endure while operating in terrorist killing fields of Iraq.

The 324th is an Army Reserve Signal Battalion from Fort Gordon, Ga. The unit falls under the umbrella of the 335th Theater Signal Command based out of East Point, Ga.

For more than three years, the 335th has managed the largest telecommunications grid in the history of modern warfare, and soon one of its own will play an important role in maintaining that network.

"It's historic", said BG Geoff Freeman, brigade commander for the 324th's immediate higher headquarters, the 359th Signal Brigade. "We are the first battalion sized element to be mobilized under the 335th", said Freeman.

The easiest way to describe the capabilities of the 324th is to compare it to its civilian counterparts.

"Think of us as your telephone company, wireless provider, and internet source all wrapped up into one", said MAJ John Phillips, 324th battalion commander.

Soldiers from the 324th Integrated Theater Signal Command scan for enemy targets during Close Quarters Combat Training on Fort Hood, Texas.

Phillips has spent most of the summer training up his battalion for their upcoming year-long mission in Iraq. His mission: to raise a sense urgency and attention to detail for his Soldiers.

"If a Soldier forgets to fill his or her canteen here it's no big deal, we can accommodate that," said Phillips. "But I want my officers to remember what happens if their soldier forgets to take their ammo before heading out on patrol over in Iraq; attention to detail must be paramount"

Nearly forty percent of the 324th has been pulled from other elements within the signal community. That's why officers have been taking full advantage of its train-up time to build a stronger working relationship within the battalion.

"We have many guys who have mobilized before, so they know what to expect", said Freeman. "We are taking that experience to help train those who will be deploying for the first time."

Training at Fort Hood has also allowed the battalion to build stronger morale by allowing these Signal soldiers to use a different set of skills they do not often get the opportunity to use.

"This is great training," said CPT John Mclain, C Company Commander. "Learning to clear a house of enemy and using basic Soldier skills has been a real motivator for my guys."

"This kind of training makes you appreciate what the guys over there are already doing", said SSG Karen Kendrick. "They had to go through the same training and now it's our turn to relieve them; it's showtime."

The 324th will replace one of three Signal battalions already operating in the Iraqi Theater

It will be the first time in Army history that an incoming Signal battalion in a time of war will be totally from the Reserves.

"We are not the same Army or Army Reserve any more," said Freeman. "I've been telling everyone that eventually everyone will get their chance".

No matter what may lie ahead for the 324th, many of its Soldiers say they are ready to get it started, so they can get the mission done and come back home to their loved ones.

"I had to explain to my family that this is something very important for me, something I have always wanted to do," said 1LT Kizzy Goss, platoon leader. "To say that I have accomplished this and brought all my Soldiers home safely is my personal goal."

The 324th is expected to begin Signal operations in Iraq sometime in September.

CPT Majewski is a graduate of the Signal Officer Basic Course, the Signal Captain's Career Course-RC, and the Public Affairs Officer Course at the Department of Defense Information School. He is the public affairs officer for the 335th Theater Signal Command located in East Point, Ga., near Fort McPherson, Ga. In civilian life, Majewski is a meteorologist at a Atlanta TV station.

11th Signal Brigade's Audie Murphy Inductees

By Eric Hortin

FORT HUACHUCA, Ariz. (NETCOM/9th ASC) – It would be an honor that two 11th Signal Brigade non-commissioned officers would have little time to bask in. SSGs Octavio Arteaga and Jaime Aparicio were inducted into the prestigious Audie Murphy Club at an impromptu ceremony Aug. 8, a little more than a week before both are scheduled to deploy to Southwest Asia.

BG Carroll F. Pollett (far left), NETCOM/9th ASC commanding general, speaks to assembled troops Aug. 8, on Brown Parade Field. Pollett and Command SGM Donna Harbolt (far right), NETCOM/9th ASC command sergeant major, inducted Staff Sergeants Octavio Arteaga (center left) and Jaime Aparicio into the Audie Murphy Club.

During a break at the brigade's change of command rehearsal, the brigade's Soldiers were called to the Brown Parade Field reviewing stand by another member of the Audie Murphy Club – BG Carroll F. Pollett, commanding general, NETCOM/9th ASC. Accompanied by CSM Donna K. Harbolt, NETCOM/9th ASC command sergeant major, the two Signal Soldiers were inducted into the Audie Murphy Club in front of their brigade.

Aparicio is a section sergeant for a tactical satellite team, who was recently selected as the runner-up Soldier of the year for Network Enterprise Technology Command/9th Army Signal Command. Arteaga is a section sergeant for a small extension node team. Both are in Company B, 86th Signal Battalion; and both are set to deploy to their second combat tour.

Each Soldier reflected on the mentorship and leadership that helped them throughout their careers, and how those leaders helped shape them.

"I use my first team chief as a base," Aparicio said. "I still, to this day, use a lot of the tools he gave me as a private. Then there is CSM (Donald) Manley – who was my battalion sergeant major and now my brigade sergeant major – and First Sergeant (John) Sanders."

Even with the huge difference in times in service – Aparicio with 4.5 years and Arteaga with 12 years – both find that combining delegating and directing leadership styles and leading by example equals effective leadership.

"I use a combination of everything," Arteaga said. "Sometimes I direct; sometimes I delegate. Most of the time, I'm out there doing what I told my Soldiers to do."

When both found out they were being inducted into the club, their reactions were indicative of their characters.

"I was very humbled, when you consider the club's namesake," Aparicio said. "You're dealing with some of the most professional Soldiers in the Army."

"I know the reputation the club has," Arteaga said. "I'm very glad to be part of it."

For both Soldiers, it has been a journey that has changed them very much and very little. Both agree that with the honor bestowed on them, they will have opportunities to branch out and draw knowledge from the elite group of club members. They were also very direct that little will change in the way they lead their Soldiers.

As they prepared for their upcoming deployment, both had the same goal – to come back safely with their teams, and become platoon sergeants in their unit, continuing traditions and influencing the careers of their Soldiers.

"This is a very exciting time to be a Soldier," Aparicio said, grinning.

Mr. Hortin is with the U.S. Army Network Enterprise Technology Command/9th Army Signal Command, NETCOM Public Affairs.

Acronym QuickScan

ADC(S) – Assistant Division Commander of Support
ASCT – Auxiliary Satellite Communications Terminal
AUSA – Association of the United States Army
CFLCC – Coalition Forces Land Component Command
COTS – commercial-off-the-shelf
DISA – Defense Information Systems Agency
DoD – Department of Defense
GOTS – commercial-off-the-shelf
ID/IQ – indefinite delivery/indefinite quantity
ITSB – Integrated Theater Signal Battalion
JNTC – Joint Network Transport Capability
METL – Mission Essential Task List
MILSATCOM – Military satellite communications
MNC-I – Multi-National Corp – Iraq
MND-B – Multi-National Division – Baghdad
MND-N – Multi-National Division – North
MND-W – Multi-National Division – West
MTOE – Modified Table of Organization & Equipment
NSC – Network Signal Company
OIF – Operation Iraqi Freedom
PEO EIS – Program Executive Officer Enterprise Information Systems
PM DCATS – Project Manager Communications and Army Transmission Systems
PM DWTS – Product Manager Defense-Wide Transmission Systems
PM WIN-T – Project Manager Warfighter Information Network-Tactical
psi – pounds per square inch
RTEP – request for a task execution plan
SATCOM – satellite communications
SSEB – source selection evaluation boards
STEP – Standardized Tactical Entry Point
TEP – task execution plan
WWSS – World-Wide Satellite Systems
UA – Unit of Action
U.S. – United States

Tactics, tips, procedures

from observer controllers

By CPT Brian "Jake" Jacobson, MSG Adrian Borel, SFC Wyman Rosener, and SFC Brian Lowman

The purpose of this article is to provide tactics, tips, and procedures to help make brigade and battalion/squadron Signal sections more successful in a tactical environment. These TTPs were identified by observing multiple units conduct operations during Joint Readiness Training Center rotations, discussions with units operating in Iraq and Afghanistan, and personal experience by the members of the Signal observer/controller team. The following TTPs are "A Way" for Signal teams to conduct business.

1. Annex H

The battalion Signal annex should be one page summarizing pertinent communication instructions for maneuver commanders. Reiterate key instructions in the coordinating instructions of the main operations order. Some major components of the annex should be:

a. Line-of-site analysis of the area of operations

b. Primary, alternate, contingency, and emergency means of communication broken down by voice and data for company procedures focusing on compromise, changeover, and delivery of COMSEC to patrol bases or elements outside of the forward operating base.

c. Frequency modulation PACE

d. Changes to the Signal operating instructions based on attachments and detachments.

2. Help desk

Within the brigade tactical operations center there should be an established "help desk". Their task is to screen issues that units or staff personnel have with equipment or connectivity.

Their purpose is to reduce the amount of "fire missions" and people going directly to the S6, non-commissioned officer-in-charge, or other personnel in the network operations center. Some keys to success of this TTP are:

a. Desk positioned at the entrance of the NOC/S6 cell with a Secure Internet Protocol Router Network connected computer, phone, a pair of squad radios, phone book, and trouble ticket system posted to the S6 share portal for users to monitor the status of their request.

b. A priority system should be established in the NOC standard operating procedure and enforced by the NOC battle captain.

c. Personnel at the help desk are charged to log the trouble tickets on the S6 web page and handle 10 level tasks if they are trained to do so.

3. Left seat/ right seat ride

While conducting the AO orientation with counter part there should be a couple of objectives. First pick their brain to find out the best ways to communicate through the AO focusing on what they have and how to use your equipment. Second, while units are moving throughout the AO they need to constantly conduct radio checks to identify potential trouble spots.

4. Digital stand to

Like a preventive maintenance check and service and a communications rehearsal combined, all systems should be turned on daily to validate the status. There is a basic and a graduate level of digital stand to. Command emphasis is essential to the success of both but here is "A Way"

a. Freshman –

(1) Instructions published in BN/BDE Frago day before

(2) Two-hour block of time to execute checks

(3)Execution

(1)Turn on Force XXI Battle Command Brigade and Below terminal

(2) Verify good Global Positioning System signal

(3) Send Free Text message to TOC terminal "Radio Check"

(4) Receive Free Text answer from TOC terminal

b. Graduate

(1) FRAGO Published

(2) FBCB2 Combat Message Sent to CP Terminal with morning ACE report.

(3) HF "Radio Check" and send TAC CHAT message to higher headquarters with current front line trace.

(4) SC TACSAT "Radio Check"

(5) Iridium phone call to higher headquarters to verify phone number.

(6) IWS/NET Meeting "Radio Check" and dry run through commanders update slides.

(7) MCS live feed checked and International Communication and Negotiation Simulations verified on FBCB2 terminal.

(8) All Source Analysis System graphics pulled from higher headquarters

(9) Advanced Field Artillery Tactical Data System NFAs plotted and text message sent higher headquarters with current round count.

(10) Battle captain sends e-mail to higher battle captain with current slant report.

(11) Update Signal Slant on BDE WEB Site.

(12) Red Voice/IP phone call to BDE S6 reporting status of all systems.

5. Communication exercise and/or communication rehearsal

Most Signal officers focus on the COMM-EX to validate their communication assets work, but they should focus closely on the communication rehearsal. The difference is one makes sure the equipment works -- the other makes sure the equipment works and the operator knows how to use it. Rehearsals should include the private first class radio telephone operator for a platoon leader to the battalion or brigade commander conducting a conference call using a IP phone. All systems should be validated by as many users as possible. Here is "A Way" to conduct a rehearsal.

6. Battle tracking

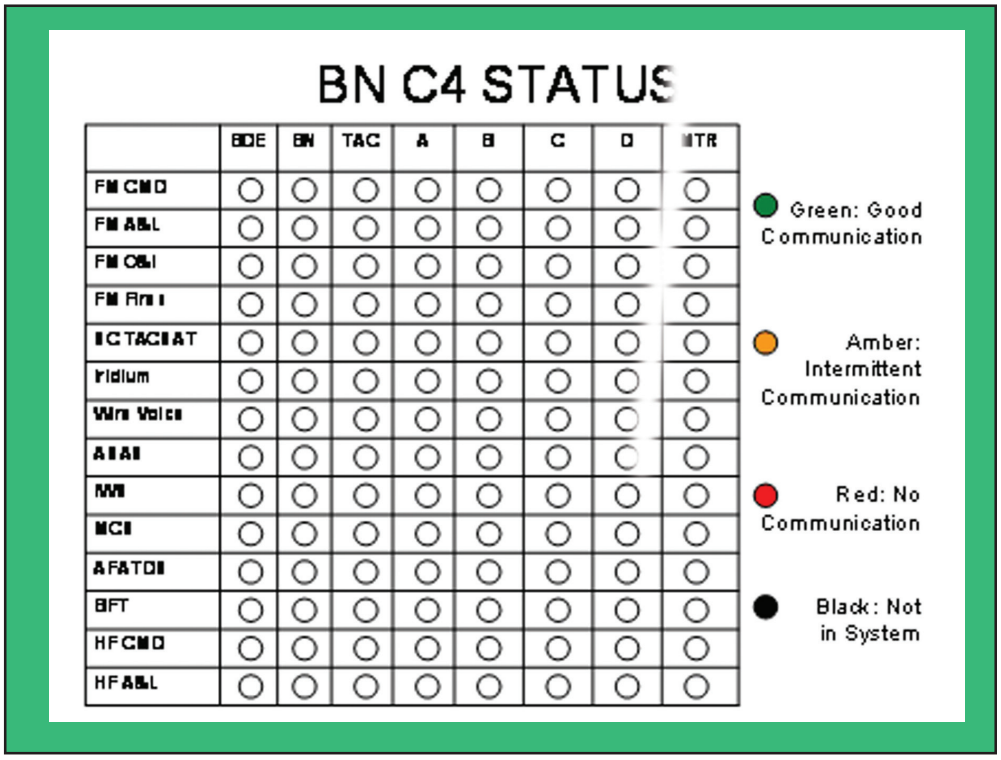
The Signal shop needs to track both network status (FM, HF,

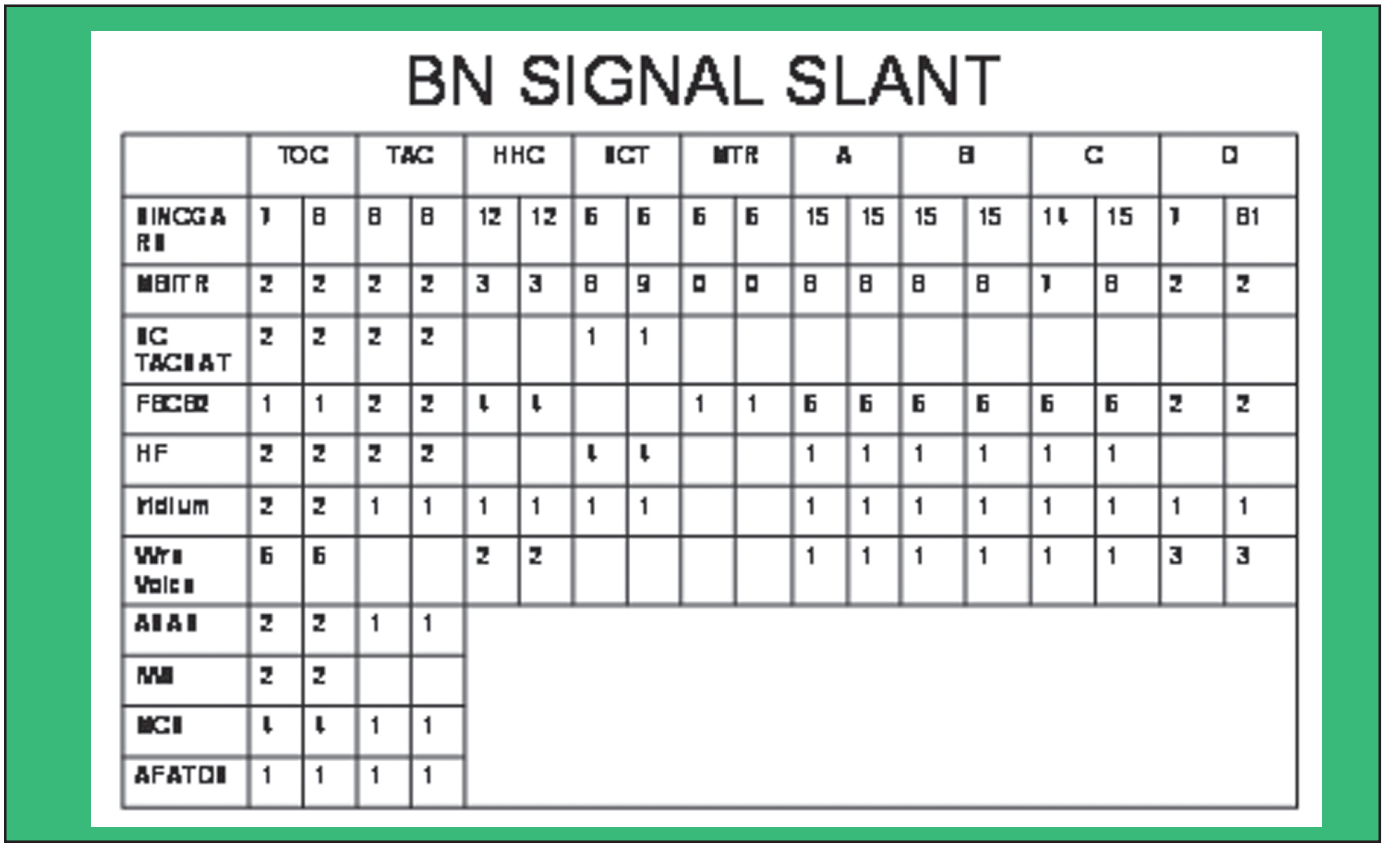
Communication Rehearsal

#	Time	Event	System	Initiator	Action	TOC	TAC	BSB	ARBN	INBN	RSTA	FABN	AVN	BSTB
1	**0800**	FM Network Call	FM	BDE TOC	BDE TOC conducts net call on FM requesting Battalion Status Report.	X	X	X	X	X	X	X	X	X
2	**0830**	HF Network Call	HF	BDE TOC	BDE TOC conducts net call on HF requesting Combat Power Report.	X	X		X	X	X	X	X	
3	**0900**	BFT Validation	BFT	BDE TOC	BDE TOC sends text message requesting Battalion Front Line Trace and response via BFT.	X	X	X	X	X	X	X	X	X
4	**0900**	TAC MAIL Validation	TAC MAIL	BDE TOC	BN Battle Captains send test e-mail to BDE Battle Captain.	X		X	X	X	X	X	X	X
5	**0930**	IWS Conference Call	IWS	BDE TOC	Battalion Battle Captains enter IWS chat room and conduct dry run of BUB slides.	X		X	X	X	X	X	X	X
6	**1000**	Red/IP Phone Call	Red/IP Phone	BN CPs	BN Battle Captains call BDE Battle Captain and report current combat power.	X		X	X	X	X	X	X	X
7	**1000**	Build Graphics on MCS-L	MCS-L	BDE S3	BN S3s build MCS-L overlay of BN sector and post them on the MCS server.	X		X	X	X	X	X	X	X
8	**1000**	Build Graphics on ASAS-L	ASAS-L	BDE S2	BN S2s build notional enemy SITTEMP on ASAS-L and post them to the server.	X		X	X	X	X	X	X	X
9	**1000**	Build Graphics on AFATDS	AFATDS	BDE FSO	BN FSOs build notional no fire areas and send to brigade.	X			X	X	X	X	X	
10	**1030**	SC TACSAT Network Call	SC TACSAT	BDE TOC	BDE TOC conducts net call on SC TACSAT requesting Communication Status Report.	X	X		X	X	X		X	
11	**1045**	Iridium Phone Call	Iridium	BN CPs	BN Battle Captains call BDE Battle Captain and confirm their phone number on phone roster.	X	X	X	X	X	X	X	X	X

TACSAT, DIGITAL, etc) and maintenance status of equipment. The TOC needs to know what assets that they have connectivity to and to which command posts, here, we use a "skittles" or "bubble" chart to display the ability to communicate. We use a slant report to monitor maintenance from which we can recommend shifting assets to elements that are short in particular areas. These are two separate reports. One report tells the commander the status of our connectivity to units on the battlefield while the other lets him know where we stand from a maintenance stand point.

7. COMSEC Compromise





Plan

The compromise plan needs to be synced with brigade and adjacent units. Pro-words (the words that are used to trigger a certain action) should be something easy to remember for the private that just arrived to the unit. I recommend using beer names and associating a particular first letter with a particular action. Such as "C" equals change Julian dates by two days forward and once the pro-word "Corona" is called over the FM all know what to do. By keeping it simple you avoid Soldiers

FM COMPROMISE

RECOVERY	ACTION	NEXT ACTION
STEP 1	Division Frequency Manager generates SOI Edition A & SOI Edition B	Go to step 2
STEP 2	SOI editions A & B issued to units	Go to step 3
STEP 3	Unit S6 issues Edition A to RTOs	Go to step 4
STEP 4	Unit S6 maintains Edition B for contingency	Go to step 5
STEP 5	Units operate using Edition A for mission IAW current time period, PLGR time and Julian date	Go to step 6
STEP 6	RTO reports SOI compromise	Go to step 7
STEP 7	S6 confirms compromise	If NO, then go to step 5 If YES, go to step 8
STEP 8	Unit reports SOI compromise through next higher headquarters to Controlling Authority	Go to step 9
STEP 9	Unit Directs all unit radio nets to change SINCGARS net timing forward 3 Julian dates and SOI usage 3 time periods	Go to step 10
	Senior signal officer determines if compromise impacts overall operation	Go to step 9a
STEP 9a	only unit SOI extract is compromised	Go to step 10
	Entire division SOI is compromised	Go to step 9b
STEP 9b	Senior signal officer directs all division/subordinate unit radio nets to change SINCGARS net timing forward 3 julian dates and SOI usage forward 3 time periods	Go to step 10
STEP 10	Senior signal officer directs supersession of Edition A and activation of Edition B	Go to step 11
	Senior signal officer does not acivate Edition B	Go to step 5
STEP 11	Units issue Edition B to RTOs ADSO generates new contingency SOI, Edition C	Go to step 12
STEP 12	Units operate using SOI Edition B for mission IAW current time period, PLGR time and Julian date	
	ADSO issues SOI Edition C to units	Go to step 13
STEP 13	Unit S6 maintains SOI Edition C for contingency	Go to step 2

writing down the key where the enemy may be able to get to it.

8. FM Compromise

9. Compromise and changeover rehearsals

When was the last time a unit conducted a traffic encryption key changeover during a field exercise?

Most units don't practice it at home station which leads to a lot of friction when having to conduct one during operations at JRTC and beyond. Push the command to train on this event during your next week-long field exercise or Signal gunnery at home station.

The JRTC Signal Team TTP is posted to our home page on AKO, please subscribe to our knowledge center for this and other information to help the unit improve success during training and operations.

10. Battle Field Circulation

"A tool" that Signal officers have is the battalion/brigade commanders movement through the AO.

This is an opportunity for the S6 or NCOIC to see their Soldiers, drop off COMSEC, conduct maintenance, and/or get an assessment of how assets are being used on the ground and what area are trouble spots.

11. Shift change brief –

During the shift change brief the S6 needs provide the commander and staff with the relevant information for them to make informed decisions. Some of the key points are:

a. Current and next challenge and password

b. Network status (the

Joint Readiness Training Center's Signal observer controllers (from left to right) 1SG Adrian Borel (BDE), SFC Brian Lowman (Battalion Task Force 2), MSG Wyman Rosener (Battalion Task Force 1), and CPT Brian "Jake" Jacobson (Reconnaissance Surveilance Target Acquistion Task Force 3).

"skittles" chart speaks for itself, so brief by exception)

c. COMSEC changeover information

d. Significant actions in the last 24 and next 48 hours

12. Information work space/ chatrooms –

Special rooms need to be set up to host conversations that are relevant to certain positions. Good examples are established "nets" for the S2 community, battle captains, and admin information. This is necessary to prevent the chaplain chiming in with religious ceremony notes while battle captains are trying to clear indirect fires.

These twelve points are basic systems that should be implemented at every S6 section in a brigade combat team and below. If you have comments or suggestions on how to improve these, add to the list, or even remove items because they are no longer relevant to what you may have seen in theater in your particular area, please contact the JRTC Signal team by phone or e-mail.

CPT Jacobson received his commission from Mankato State University and was assigned to the 25th Infantry Division where he served as a Company executive officer, Forced Entry Switch platoon leader, and Infantry battalion S6. Following the Signal Captains Career Course he was assigned to the 3rd Infantry Division's 3rd Squadron 7th U.S. Cavalry serving as an S6 until he took command of C Company 123rd Signal Battalion and transitioned them into A company, 3rd Brigade Troops Battalion. Currently he is assigned to the Joint Readiness Training Center as a Signal observer controller.

MSG Borel enlisted in 1990 as a Signal support specialist and was assigned to 6/8th Field Artillery, 7th Infantry Division. His tactical assignments include 3/67th Armor (2nd Armor Division), 1/16th CAV, Seoul Air Base, and 144 Air Defense Artillery (4th Infantry Divison), and 46th Combat Engineers. He is currently the senior Signal non-commissioned officer observer controller at the Joint Readiness Training Center.

SFC Rosener enlisted in 1989 as a Signal support specialist assigned to 37th Engineer Battalion (Airborne). His tactical assignments include 1st Brigade (1st Cavalry Division), 2nd Battalion, 7th Cavalry (1st Cavalry Division), 1st Battalion 43rd Air Defense Artillery, and 1st Battalion 7th Field Artillery (1st Infantry Division). Currently he is assigned to the Joint Readiness Training Center as a Signal Observer Controller.

SFC Lowman enlisted in 1991 as a Signal support specialist assigned to 2nd Battalion 8th Infantry. His tactical assignments include 1st Battalion 12th Infantry, 3rd Brigade 4th Infantry, 2nd Armored Cavalry Regiment, and 1st Battalion 27th Infantry Regiment. He is currently assigned to the Joint Readiness Training Center as a Signal observer controller.

Acronym QuickScan

ABCS – Army Battle Command System
AFATDS – Advanced Field Artillery Tactical Data System
ANCD – Automated Net Control Device
AO – Area of Operation
ASAS – All Source Analysis System
BDE – Brigade
BN – Battalion
CASEVAC –Casualty Evacuation
CO – Company
COMSEC – Communications Security
COMM-EX – Communications Exercise
CPN – Command Post Node
FBCB2 – Force XXI Battle Command Brigade and Below
FOB – Forward Operating Base
FRAGO – Fragment Order
GPS – Global Positioning System
IP – Internet Protocol
IWS – Information Workspace
JRTC – Joint Readiness Training Center
JNN – Joint Network Node
LOS – Line-of-Sight
MCS – Movement Control System
NCOIC – Non-Commissioned Officer in charge
NOC – Network Operations Center
PACE – Primary, Alternate, Contingency, Emergency
PLT – Platoon
RTO – Radio Telephone Operator
SIPRNET – Secure Internet Protocol Router Network
SO I – Signal Operating Instructions
SOP – Standard Operating Procedure
SQDN – Squadron
TAC CHAT – Tactical Chat
TACSAT – Tactical Satellite
TEK – Traffic Encryption Key
TOC - Tactical Operations Center
TRP – Troop

Commercializing comms in a 'Come-as-You-are' stability operation

By LTC Michael R. McCaffery

Communications support in a 'come-as-you-are' war implies organic man-pack and mobile-tactical radio, satellite, and microwave Signal systems. These systems, often functionally adequate for training center rotations, as well as high-intensity conflict, are soon overwhelmed by demand in stability and support operations.

When the maneuver war stops and fixed bases are established, leaders often make a mental transition from field to garrison environment. This can include communications expectations, including commercial-grade communications such as high-speed Internet and video teleconferencing.

This is a brief review of communications networks undergoing change over time, and some potential thoughts on how to facilitate the critical evolution of communications infrastructure to meet the evolving needs of the warfighter as conflict shifts from combat to stability operations.

Before we look ahead to the next fight, we should take the time to review lessons learned from commercialization support to stability operations of the past and present.

In stability and support operations of the past, the Signal Corps has retooled on-the-fly to provide right tools for the commander. This ad-hoc process, referred to generally as commercialization, normally presents attributes reflecting a change from all-tactical communications network to fixed site, large-pipe satellite, cable, and tropo-scatter reach-back as well as intra-theater microwave radio, established and supported most often by telecommunications contract personnel.

Vietnam 'Long Lines' Signal construction

Communications support requirements in Vietnam evolved considerably over the course of the conflict. Reach-back and intra-base communications needs were met in the early stages by an Air Force contract which installed 'Back Porch' and 'Crossbow' fixed, over-the-horizon tropo-scatter systems. These provided the Army higher bandwidth links between operational bases and strategic reach-back communications through nodes in Thailand and the Philippines.

This ad-hoc process, referred to generally as commercialization, normally presents attributes reflecting a change from all-tactical communications network to fixed site, large-pipe satellite, cable, and tropo-scatter reach-back as well as intra-theater microwave radio...

Because the war was supposed to be over by 1965, strategic communications upgrades were stalled until inevitable demands for better quality and more reliable voice and data links resulted in an expansion of units dedicated to South-East Asia commercialization from one 'Long Lines' Signal battalion in 1964 to what would eventually become 12 battalions under the 1st Signal Brigade by 1967.

In that year, the tropo-scatter systems were replaced by a wideband microwave line-of-sight fixed microwave system, installed by contractors and linking bases from the demilitarized zone to the Mekong Delta.

By 1969, undersea cable (as well as, some nascent satellite) links were added, thereby connecting bases in South Vietnam via reliable, large-bandwidth pipes directly to the worldwide Defense Communications System.

Task Force Falcon-Kosovo

In the 1990s Balkans operations, tactical satellite links to and between major command nodes were augmented, and then replaced by 5th Signal Command's contracting of large-bandwidth commercial C-band satellite terminals.

In Kosovo, outlying bases were supported by tactical mobile subscriber equipment until 2002 when the Balkans commercialization program provided intra-base line-of-sight microwave radio, greatly expanding communications capacity.

Unfortunately, most of the outlying bases were abandoned soon after, and the line-of-sight project was subsequently reoriented to provide a terrestrial backbone connection of major remaining bases as well as the first direct link to United Nations headquarters in Pristina. For intra-theater reach-back communications, commercial satellite to Germany via the C-band satellite terminals remained as the primary link to the wider Defense Information Systems Network. On-base communications infrastructure was also completely commercialized by 2002 with semi-permanent switch, router, and cable plant operated and maintained mainly by contract personnel.

Operation Iraqi Freedom

During the initial stages of Operation Iraqi Freedom, maneuver warfare settled down to base camp operations with traditional TRI-TAC and MSE systems providing nearly

all communications to and among corps and divisional units.

By 2003, the first Central Command-purchased commercial satellite Deployable Ku-band Earth Terminal sets were fielded and installed and provided both reach-back and intra-theater communications.

The last-mile on base/campus infrastructure was installed and operated by individual commands in each individual sector. In Mosul for instance, the brigade G6 used Iraqi-Kurdish contractors to install cable and radio systems on and between several operational bases, thereby extending DKET commercial services across the sector and to the desktop. In Tikrit, the 1st Infantry Division used newly acquired promina-based data packages to breakout the DKET bandwidth to the main divisional operations centers in the area. Also, the Big Red One purchased and installed commercial microwave radio systems to enable campus-wide commercial services beyond the immediate locations of the satellite terminals. In Kirkuk and Balad, Air Force communicators leveraged pre-arranged, funded contracts to quickly extend DKET services via commercial base fiber-optic cable sub-stations to Army and Air Force units. Finally, in Baghdad, Multi-National Corps-Iraq employed contractors to install fiber-optic and campus microwave radio systems.

Lessons learned

What are the commonalities that span Army operations with regards to commercializing communications? First, while each commercialization effort has been implemented differently, similarities abound. Naturally, with the transition from mobile high-intensity conflict to fixed-site stability operations, comes an inevitable increase in bandwidth demand for both secure and non-secure voice and data.

Demand is pushed by the usual increase in administrative and logistical traffic, as well as the need to engage in civic programs. The introduction of the Internet into combat zones has also created a seemingly insatiable demand for morale-support connectivity. To fully support stability operations, commercial Internet, phones, and eventually video teleconferencing connections have to be planned, installed, and managed for large-pipe reach-back to intra-base communications, and to the desktop in the last mile of connectivity.

As commercialization efforts progress the virtual boundary between strategic, commercial-quality 'white' communications systems and 'green' mobile/tactical (MSE and TRI-TAC) systems shifts steadily over time from the sustaining-base reach-back point, through the intra-theater base links, constantly closer to the in-country desktop.

As the environment becomes more permissive (as it did in the Balkans) remote radio relay towers and eventually fiber-optic cable backbones may be established. This trend is matched by an inevitable increase in civilian contract personnel to install, operate, and maintain commercial communications links theater-wide and at all echelons. Also, in-country stay-behind equipment continuously increases as the network is commercialized, reducing the friction on the network as units rotate in and out of country.

How do we capitalize on the lessons learned to look forward to the next commercialization project? The Signal Corps' ongoing transformation to LandWarNet, Joint Network Nodes, and Warfighter Information Network-Tactical all serve to make operational network transition easier, mainly due to the infusion of commonly available commercial physical layer components and skills at all echelons.

If we assume that future operations will follow the pattern set by Vietnam, the Balkans, and Iraq, we may be able to achieve efficiencies in future commercialization projects. Using the standard Doctrine Organization Training Materiel Leadership Personnel Facilities, or DOTMLPF, framework, the following observations and potential measures would apply.

Doctrine

Commanders own their networks, but S6s and G6s have to have tools to advise their bosses on network evolution. Doctrine and/or policy for standard upgrade planning and management, potential services and Morale Welfare Recreation connectivity should be considered, including rules for private Soldier communications systems in deployed areas. Since higher headquarters normally extends services to lower echelons, unit S6s and G6s should use doctrine that spells out unit/echelon responsibilities for commercialization efforts. For base/camp infrastructure, standards for security, allocation, and morale support would be situation dependent, however, baseline guidance for commercialization might also greatly assist future G6s by ensuring that all commercialization projects are fully meshed and mutually supporting.

Organization

Like tactical communications support, the 'higher to lower' rule applies for commercialization efforts. The largest signal organization in theater initially concentrates on the provision of big-pipe reach-back links to the sustaining base as well as to the immediate subordinate unit headquarters'. It is up to the subordinate units to connect that bandwidth to their remote bases down to the desktop. Theater Signal Commands (1st Signal Brigade in Vietnam then Korea, 5th Signal Command in Europe, and now the 160th Signal Brigade in South-West Asia) which are based in theater and commanded locally are typically the driving force for the inevitable upgrade of combat signal support systems.

A standing deployable commercialization cell with the primary mission to quickly bridge the gap between mobile-tactical communications to fixed-strategic communications for both inter-theater reach-back as well as intra-theater telecommunications services would greatly speed the transition to commercial-grade services. With ready project

management, contracting, and commercial systems skills, this element would offer in theater communicators the know-how to construct a commercialized network which fully supports the commander's requirements and priorities.

The last mile belongs to the local commander on each base camp, thereby putting the responsibility on the G6 or S6 to implement local campus network upgrades and build the stay-behind infrastructure across bases to the desktop. Units stretched to perform in combat then stability operations, often rely on civilian contract personnel to install and operate the last mile infrastructure.

With the change from division Signal battalion to G6 contractor standards that can be inserted into statements of work would ensure baseline standards across multiple bases and sectors.

Training

Recent changes to provide Soldiers a foundation in commercial systems by the Signal Center will earn dividends for units overseeing the implementation of commercialization, especially in installing and managing the last mile to the user.

Signal Soldiers will remain essential due to the need for organic communications in a deployable, high-risk austere environment. Leaders also should consider training unit support personnel at both home station and deployed location, especially morale-support communications. This would allow units on remoter bases to better sustain their commercialized operational and morale support systems.

This has the added benefit of reducing the need to deploy maintenance personnel and contractors via air or convoys to assess and repair systems. Local leaders and Soldiers require a good grounding in the latest commercial infrastructure, primarily the physical layer of routers, switches, hubs, cable etc.

Developing networks can be most effectively employed if they can be seamlessly integrated into military (currently MSE/TRI-TAC, soon Warfighter Information Network-Tactical) systems in the initial stages of commercial expansion.

Since most commercialization projects are implemented and managed by civilians, training is often bought as part of a contract package. Some contracting officer representative awareness and training for communicators is essential for those officers to be able to implement and manage the contracts and personnel who do much of the commercialization work.

The last mile belongs to the local commander on each base camp, thereby putting the responsibility on the G6 or S6 to implement local campus network upgrades and build the stay-behind infrastructure across bases to the desktop.

Materiel

To optimize campus/base networks, communicators need to be able to obtain and stock a wide variety of commonly available commercial products such as cable, switches, routers, even user terminals such as telephones and computers which can be left in place for the next unit rotating into theater.

Short-range campus radio and cable infrastructure are required to break out the big pipes and connect the last mile. Obtaining material in theater can be a major challenge, especially with immature or risky commercial shipping capabilities.

Complete reliance on military delivery systems also requires some knowledge of logistical tracking and control systems and adds strain to systems that are typically dedicated in the early stages of stability operations to force sustainment.

Communicators can contract for the provision of commercialization materials, however programs can be frustrated by in-theater bureaucratic contract review and approval processes. In Iraq at Kirkuk and Balad, Air Force communicators avoided this by using standing contingency communications funding and ready-contracts, obviating the need to rely on evolving contracting and comptroller support agencies and speeding up their base commercialization efforts.

Stay-behind equipment increases in importance as the commercialization effort proceeds. The friction of unit-to-unit relief in place operations is exponentially reduced by the ability of the commander to have continuous command, control, and data systems.

In building stay-behind equipment infrastructure, units must consider operational wear-and-tear, augmentees and liaison personnel, and the need to leave mission critical data for continuity across unit rotations as well as accountability and handover procedures and training.

Leadership and education

Expectation management must be part of the commercialization program and leaders must have some understanding of the evolution of communications systems. Knowing the status, capabilities, and limitations will not only allow commanders to more fully integrate their command and control system into their operational concept, it will allow them to be a stakeholder and key advocate of the continued evolution of communications networks to fit their prerogatives and the evolving operational situation.

Standard phases of commercialization would enhance the ability of leaders to grasp standard packages of services provided at each step in the overall commercialization effort. Communicators leveraging such doctrine would be able to better prepare themselves, their Soldiers, and their equipment for progressive network commercialization prior to

deployment.

Signaleers themselves should consider formal training in the both project management and contracting arenas. An overview of the latest commercial telecommunications systems with their capabilities and limitations would also widen the selection of services available to apply to stability operations.

As part of standard graduate education, courses of these types would have the added benefit of providing the deploying Signal leader with key points of contact and sources of information in the sustaining base.

Personnel

Contractors are often the key to success in commercialization. Finding the right mix of knowledge and ability, as well as being able to effectively protect, equip, and manage those personnel enables commercialization projects to stay on track. Most contractors in developing theaters are dedicated, hard-working people, however, leaders need to be able to weed out and deal with substandard performance according to contracting regulations when necessary.

Employing local nationals should not be completely disregarded, especially where hiring locals can make a contribution to a larger military objective of rebuilding of the local economy as well as tap into local sources of supply. Finally, for commercialization contracts to be swiftly implemented and effectively managed, comptroller personnel should be included in the major organizations which oversee a large-scale commercialization plan of action.

Facilities

Commercial communications infrastructure requires more capable management facilities for effective operation. Tactical network Systems Control nodes, or Syscons, can evolve over time to Network Operations and Security (or Support) Centers which oversee the evolving network in theater. The NOSC is not only important for central management of bandwidth and systems, but for the application of network and desktop security measures.

Due to high costs and required expertise, a fully functional NOSC usually can only be built and maintained at divisional level and above. Deployable NOSC packages, like that employed in Kosovo by 5th Signal, can link the evolving commercial networks in austere environments to the greater Global Information Grid, ensuring optimum bandwidth oversight, network security, and responsiveness to the warfighter.

Each base requires some facility to centrally manage local commercial infrastructure upgrades and to monitor operations and maintenance. This base Signal node evolves from unit tactical Signal unit operations centers using commercial network control software (and training) added to server and back-office management systems to build a base network support facility. The local node is the first line of defense in identifying, assessing, and fixing problems in the network.

Between the NOSC and the base operations, a sector network control facility oversees the reach-back, interbase and intra-base communications. This last facility is essential so that the sector (multi-base) commander has the tools to optimize the network to support his operations across his sector. The sector facility also is a key node to ensure responsiveness when remote or temporary bases are added or closed according to the commander's operational requirements.

All network operations and management facilities have some common requirements. Network view software at each level of management provides interoperable views of different levels of detail, and optimally is able to exchange trouble tickets and alerts. Network facilities also must have similar support packages, which include backup power and data recovery systems.

Conclusion

Looking to the future, the successes of anti-Iraqi Forces in Iraq portends perhaps more anti-insurgent stability and support operations than traditional maneuver combat warfare. This implies future operations with fixed-base camps, security and presence patrols, civic-support efforts, and commercial communications supporting operations. Preparing ahead of time for supporting the communications requirements for stability and support operations makes sense, and will tie the strategic and tactical sides of the Signal Corps more closely together as the two arms, which support the warfighter across the spectrum of conflict.

(Endnotes)

[1] All information on Vietnam comes from MG Thomas Rienzi's pamphlet, "Vietnam Studies: Communications-Electronics 1962-1970", Department of the Army, Washington, D.C., 1985.

LTC McCaffery is a former G6 of Task Force Falcon in Kosovo, battalion executive officer, and assistant G6 of the 1st Infantry Division in Iraq. He is currently the division chief of the National Military Command System Division of the Strategic Operations section of the Joint Staff J-3 (Operations) in the Pentagon.

Acronym QuickScan

AIF – Anti-Iraqi Forces
COR – Contracting Officer Representative
DCS – Defense Communications System
DISN – Defense Information Systems Network
DKET – Deployable Ku-band Earth Terminal
DOTMLPF – Doctrine, Organization, Training, Materiel, Leader Development, Personnel, and Facilities
JNN – Joint Network Nodes
MSE – mobile subscriber equipment
NOSC – Network Operations and Security Centers

Four Distinguished Members inducted into Regiment

By Susan Wood

Upon Regimental activation, the Signal Corps instituted a program for the recognition of personnel who made a special contribution and distinguished themselves in service to the Regiment. These distinguished member positions are designed to not only recognize those people whose service is most notable, but to promote and enhance the history and traditions of the Regiment and foster cohesion among its members.

BG Randolph Strong, Chief of Signal, with the assistance of GEN Scott Wallace, Training and Doctrine Command commander, inducted four new Distinguished Members of the Regiment in a ceremony Aug. 24, 2006, at the LandWarNet Conference in Fort Lauderdale, Fla.

Retired CSM Larry Paylor

Retired CSM Larry Paylor's career began in 1972 when he attended basic training at Fort Dix and then received advanced individual training in the Signal Corps at Fort Gordon.


Retired CSM Larry Paylor

Paylor served five tours overseas to include service with the 1st Signal Brigade in Korea and numerous assignments with the 5th Signal Command and as command sergeant major of the 32nd Signal Battalion in Germany. He has served in every non-commissioned officer leadership position, from team chief, operations sergeant and first sergeant, to command sergeant major. He served as command sergeant major of the 35th Signal Brigade, Fort Bragg, N.C., the command sergeant major of the ll08th Signal Brigade, Fort Ritchie, Md., the Fort Ritchie Army Garrison CSM, and finally the CSM of the U.S. Army Signal Command, Fort Huachuca, Ariz. He has received numerous awards and recognitions to include two Legion of Merits and

Silver and Bronze Orders of Mercury and he is an honorary member of the Sergeant Audie Murphy Club. Paylor has been retired since 2002 and continues to support the Signal Soldier as a defense contractor for Engineering Solutions and Products, Inc. In 2004 he deployed C4 packages to Afghanistan in support of Operation Enduring Freedom, which proved to be hugely successful in providing communications to Soldiers on the ground. In recognition of outstanding contributions to Regimental continuity, tradition, and esprit de corps, Retired CSM Larry Paylor was assigned the distinction of Distinguished Member of the United States Army Signal Regiment by BG Randolph Strong.

Bobby Dunn

Bobby Dunn enlisted in the Army in 1961 and retired after 23 years of honorable and selfless service. His military career encompassed a variety of Army security and agency and Signal assignments. He served in combat as a tactical Signal officer with the 1st Battalion, 46th Infantry of the 196th Infantry Brigade and then with the Signal Advisory Group in Vietnam. He later served with the 16th, 122nd, and 142nd Signal Battalions, and finally with the 3rd Signal Brigade as the brigade S4. Upon retirement, Dunn joined General Dynamics serving as the manager of the Mobile Subscriber Equipment Regional Support Center for the Third Corps at Fort Hood, Texas. In this capacity, he has continued to provide support for the U.S. Army for 20 years. He deployed in 1991 to support Operations Desert Shield and Desert Storm with four recently fielded MSE Signal Battalions and then deployed in 2003 in support of Operations Enduring Freedom and Iraqi Freedom I, and once again in 2004 for Iraqi Freedom II and III. Dunn is personally and professionally involved with all aspects of the Third Corps Signal Force. Because of his untiring contributions to the Signal Regiment and the Army, Dunn was recognized as a Distinguished Member by BG Randolph Strong.

Retired MG Eugene Renzi

MG Eugene Renzi retired from the United States Army in 1990 with 32 years of service. At the time of his retirement, he was the director for Command, Control, and Communications Systems, U.S. Pacific Command. His earlier tours included duty as a communications staff officer in Vietnam, commander, 40th Signal Battalion, commander of operations command and deputy chief of staff for operations and plans, USA Communications Command, Washington, D.C., commanding general, 7th Signal Command at Fort Ritchie, Md., and J6, United States Pacific Command.

After retirement, Renzi joined ManTech International and is now president of the defense systems group and senior executive vice president of the corporation. His duties encompass corporate development in defense communications. In June 2003 Renzi was elected as chairman of the board of directors of the Armed Forces Communications-Electronics Association International, which most members know, provides a bridge between government and industry with over 20,0000 individual members, 10,000 corporate members, and 1,000 corporate sponsors.

Because of Renzi's stellar military career and his continuing contributions to the communications field, he was appointed a Distinguished Member of the Signal

Retired LTG Peter Cuviello

Regiment by BG Randolph Strong.

Retired LTG Peter Cuviello led with vision, decisiveness, and a true commitment to the Signal Regiment, the Army and the United States of America. Cuviello began his military career as a platoon leader with the 141st Signal Battalion, then platoon leader and radio officer with 523rd Signal Battalion, 23rd Infantry Division, in Vietnam. He served as a company commander with the 67th Signal Battalion at Fort Gordon, Ga.; commander, 57th Signal Battalion and 3rd Signal Brigade at Fort Hood, Texas; Chief of Signal and commanding general, United States Army Signal Center, Fort Gordon. In his final assignment as the chief information officer and G6 for the United Army, he successfully led the Army's most intensive information technology changes in more than a century – Army knowledge management – while fully dedicated to directing the Army's command, control, communication, and computers as related to national security and defense. After his 33 years of military service, Cuviello retired and joined Lockheed-Martin Corporation where he continues to serve the military C4 and Information Technology community in combat support systems development and as vice president for integrated systems and solutions business strategies. He serves as an executive board member with AFCEA and the National Science Center and is active in the Signal Corps Regimental Association and Association of the United States Army. He was named the International AFCEAN of the Year in 2003. His personal commitment to the ideals and people of the Regiment serve as a working example for all Signaleers, both military and civilian. He consistently sets the standards that bring great honor to him and the Signal Regiment. For his outstanding contributions and accomplishments, BG Randolph Strong welcomed him as a Distinguished Member of the Regiment.

Ms. Wood is the chief of the Regimental Division, Office Chief of Signal, at Fort Gordon, Ga.

Acronym QuickScan

ESP – Engineering Solutions and Products, Inc.

National Communications Architecture: Required capabilities to support a JTF, challenges to USNORTHCOM

By LTC Reginald T. Cox and Retired COL Keith H. Snook

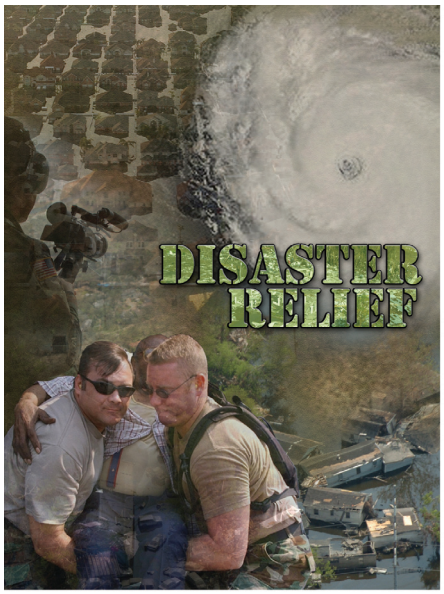
In late August of 2005, Hurricane Katrina struck the southern shores of the United States as one of the deadliest and costliest hurricanes in American history. Not only did Katrina wreak havoc with city, county, and state infrastructure, the subsequent unanticipated levee breaks and flooding of New Orleans resulted in a disastrous situation for large segments of the New Orleans populace.

The situation quickly surpassed prior planning assumptions and the capability of local responders to mitigate loss of life and ease human suffering. Courageous rescue efforts on the part of Department of Defense, federal agencies, state, and local organizations significantly reduced the catastrophic potential for loss of life; however, reducing loss of life and easing human suffering for more than four hundred thousand displaced people is only part of the national challenge.

The larger challenge is how we, as a nation, will respond to catastrophic events in a timely and robust fashion. This challenge is being addressed at all levels of government.

For United States Northern Command, the challenge was not the ability to respond to national catastrophes but the necessity for detailed plans that include all aspects of operational mission support with federal, state, and industry partners.

For the first time, USNORTHCOM activated a Joint Task Force to command and control on scene DoD activities and provide Defense Support to Civil Authorities. As a result, USNORTHCOM found it necessary to overcome several challenges that had not been identified in past training evolutions. These challenges included little experience in manning and operations of a JTF staff, interagency coordination and gaps in the National Response Plan, near total destruction of the commercial communications infrastructure, and interoperability among federal, state, and local mission partners.



Crucial to the success of the JTF headquarters is the identification of prepackaged deployable communications capabilities that can be scaled to provide services to a deployed JTF headquarters. In order to effectively address this issue, USNORTHCOM has investigated and identified candidate units to source future communications capabilities.

What we do know is that the formation of a JTF in the future will likely occur in phases very similar to the evolution of JTF Katrina. The rudimentary beginnings of a JTF will include the initial deployment of situation assessment officers and liaison officers to the Joint Operations Area. The initial communications requirements in the JOA will be met through the use of rapidly deployable 'suitcase' type capabilities that can accompany those deploying personnel.

Since those first to deploy will serve as the nucleus of the JTF as well as JTF Commander's situational awareness team, they will need mobile, light-weight communications capabilities. This requirement could include assets such as handheld satellite phones, cell phones, personnel digital assistants/Blackberry devices, a Global Positioning System capability, and some flavor of military radio.

After the arrival of the initial team, the first elements of the JTF headquarters are likely to arrive in the JOA. The JTF commander, who initially requires civilian and military satellite communications, may accompany these DoD first responders. To facilitate initial command and control, the JTF commander, JTF component commanders and key liaison officers, will all require mobile/portable communications packages to enable access to enterprise networks via national communications infrastructures. These packages would form the core of the JTF's communications package.

Initial communications capabilities for tactical command posts should be self-sustaining and interoperable with both first responders and local authorities. The Standing Joint Force Headquarters-North Deployable Communications Capability Van, or a similarly configured command and control vehicle with the appropriate interfaces could meet the requirement. Such a resource would provide basic communications and automation support for approximately 50 personnel.

The JTF should anticipate communications requirements and automation equipment to accommodate growth of the tactical command post from 50 to approximately 250 users with classified and unclassified data processing as well as voice and perhaps video services, classified and unclassified video teleconferencing services.

The fully configured JTF command post will require SATCOM backhaul, but should also be able to function in an autonomous mode if the infrastructure supports it. The JTF

will also require cellular radio capabilities that support the internetworking of voice, video, and data at broadband wireless rates. Commercial telephone service and wireless/cellular capability is critical, since this is the one technology that is common to all incident responders.

This same JTF will also require force-tracking capabilities for deployed responders and vehicles. Command post systems need to support military and perhaps some civilian force tracking systems and enable integration of those data feeds into the framework of the USNORTHCOM common operational picture. As broadband services become more and more prevalent, use of broadband services via wireless devices at the incident scene and JTF headquarters will greatly enable collaboration and situational awareness with mobile access to collaborative information exchange environment.

A Civil Communications Reserve Capability mechanism similar to the Civil Reserve Air Fleet from the communications industry is an idea quickly growing in popularity. As part of this concept, the federal government could require commercial communications companies to maintain regionally-based, rapidly-deployable communications capabilities.

In times of emergency, the federal government could direct deployment of this capability with priority access to first responders, local government officials, and state/federal emergency support personnel. A component of this proposed program should enable temporary use of commercially controlled frequency and spectrum resources for government owned emergency communications equipment.

The identification and resourcing of prepackaged, deployable communications capabilities that are rapidly scalable is absolutely essential to the success of future disaster relief operations. Hurricane Katrina relief operations proved these capabilities must be able to fulfill the full range of requirements – from a simple tactical command post, to a full-up headquarters. We cannot predict the nature, severity, or size of the next disaster. Therefore, we must be ready to respond with the appropriate capability at the scale needed in a rapid manner. We have to do it now, and we have to do it right to be properly prepared for the nation's next disasters.

JTF Katrina Ops Center set up for the 2005 disater relief operations.

Retired COL Snook has served in the Command Control Systems Directorate for NORAD and U.S. Northern Command since 2003. Previously he served as the director of Combat Developments, U.S. Army Signal Center and Fort Gordon, Ga. Prior to that, his assignments included commander, 93rd Signal Brigade, Fort Gordon, director of Space and Networks, DISC4, Pentagon, deputy commander, 2nd Signal Brigade, Mannheim Germany, and commander 43rd Signal Battalion, Heidelberg, Germany. Since retirement, he has been employed by Booz Allen Hamilton. He holds a Master of Arts degree in political science from North Carolina University, Raleigh, and is a graduate of the U.S. Army War College. Snook can be reached at 719-556-3659 or keith.snook@northcom.mil

LTC Cox is currently serving as commander of U.S Army Recruiting Battalion, Denver, Colo. Previously, he served as the chief of operations and plans for the North American Aerospace Defense Command and U.S. Northern Command J6 at Peterson Air Force Base, Colorado Springs, Colo. His prior assignments include executive officer, 17th Signal Battalion, 22nd Signal Brigade, Signal operations and plans officer, Fifth Corps G6, Germany, and Company Command in the 15th Signal Brigade. He earned his Bachelor of Science Degree in computer science from Alabama A&M University in Huntsville, and a Masters of Arts in computer resource information management from Webster University. Cox can be reached at 303-894-9725 or Reginald.cox@usarec.army.mil

Acronym QuickScan

C2 – command and control
CCRC – Civil Communications Reserve Capability
COP – common operational picture
CRAF – Civil Reserve Air Fleet
DCCV – Deployable Communications Capability Van
DoD – Department of Defense
DSCA – Defense Support to Civil Authorities
JTF – Joint Task Force
LMR – Land Mobile Radio
GPS – Global Positioning System
JOA – Joint Operations Area
LNO – Liaison Officer
SATCOM – Satellite Command
SJFHQ-N – Standing Joint Forces Headquarters – North
USNORTHCOM – United Stated Northern Command
VoIP – Voice over Internet Protocol
HF – High Frequency
DCS – Defense Communications System

Chief of Signal Comments continued from Inside Front Cover

these same units. Moving past that, however, the Brigade Combat Team and other unit commanders have fully adopted and are completely on board with having their own organic communications support. They understand that the support is much expanded from what they had before under the MSE structure.

They have moved from having a Small Extension Node switch with a 256 Kb/s connection for access to the network to having their own Brigade Signal Company with a Joint Network Node. The JNN delivers Voice over Internet Protocol, dynamic IP, video teleconferencing, and access to classified and unclassified networks.

The JNN provides the BCT with direct access to the network via Highly Capable Line-of-Sight (up to 8 Mbps), Frequency Division Multiple Access Satellite Communications, or Timed Division Multiple Access shared bursts. The capability that has been fielded is tremendous.

Finally, none of these great things could happen without each of you doing your part. As always, each individual Soldier, non-commissioned officer-in-charge, warrant officer, functional area officer, and branch officer continues to make incredible things happen. I am overwhelmed by the selfless service that the Regiment is displaying as we continue the Global War on Terror.

In all of my travels, commanders are telling me that you are getting the job done – and more.

Each of you continues to build upon the proud heritage of our Regiment.

BG Randolph P. Strong
Chief of Signal

Acronym QuickScan

AIT – Advanced Individual Training
BCT – Brigade Combat Teams
FDMA – Frequency Division Multiple Access
FOB – Forward Operating Bases
HCLOS – High Capability Line-of-Sight
JNN – Joint Network Node
LWN-U – LandWarNet-University
MSE – mobile subscriber equipment
NCO – non-commissioned officer-in-charge
SATCOM – Satellite Communications
TDMA – Time Division Multiple Access
VoIP – Voice over Internet Protocol

Signal's *'Army Communicator'* goes digital on AKO

By CW5 Wayne H. Jensen Jr.

The digital version of the *Army Communicator (AC)* is now available by email subscription or you can download it from the **Signal Center Community page**. The digital version contains graphics, articles, and links directly to resources, not available in the published version. Additional topics of interest include the latest on LandWarNet, networking the force in the joint fight, training updates, lessons learned in OIF and OEF, personnel actions such as the creation or deletion of MOSs, and more. All Signaleers and any others with a need to keep up with the latest happenings within the Regiment are encouraged to request a subscription to the digital version of the *AC*. You can have copies of *AC* sent to your home or office by sending an email to the **Army Communicator Editor**. Please provide an email address (preferable AKO email address).

Another benefit of receiving a digital copy of *AC* is it provides you a way to receive your copy as soon as it is completed. In addition, current and past issues of *AC* can now be downloaded and/or viewed on the **Army Communicator Web Site** or **Signal Center Community page**. Once you are at the SIGNET community page go to the Signal Information Channel and click on the **Army Communicator link** (highlighted in blue). This will give you the option of opening or downloading the current issue of *AC*. Previous issues of the *AC* are available by selecting the **Army Communicator folder** link. This link takes you to the **Army Communicator folder** containing current and past editions.

We will be sending AKO notifications to all members of the Signal Regiment in all three components quarterly. If you want to receive an AKO notification when new editions of the *AC* are available and you are not a member of the Regiment send an email request to the **Army Communicator Editor** with your AKO user ID in the body of the message. This is an excellent way to ensure you have the latest copy of the *AC* as soon as it is published.

I recommend that you continue to subscribe to published copies of the *AC* for distribution in your unit orderly rooms, headquarters, or front offices. This will assist us in spreading the word about the *AC* to as wide an audience as possible.

CW5 Jensen serves as Signal Warrant Officer Proponent Manager, Office Chief of Signal, Fort Gordon, Ga. He can be reached by email at ***jensenw@us.army.mil or by calling 706-791-6545 or DSN 780-6545.***

Acronym QuickScan

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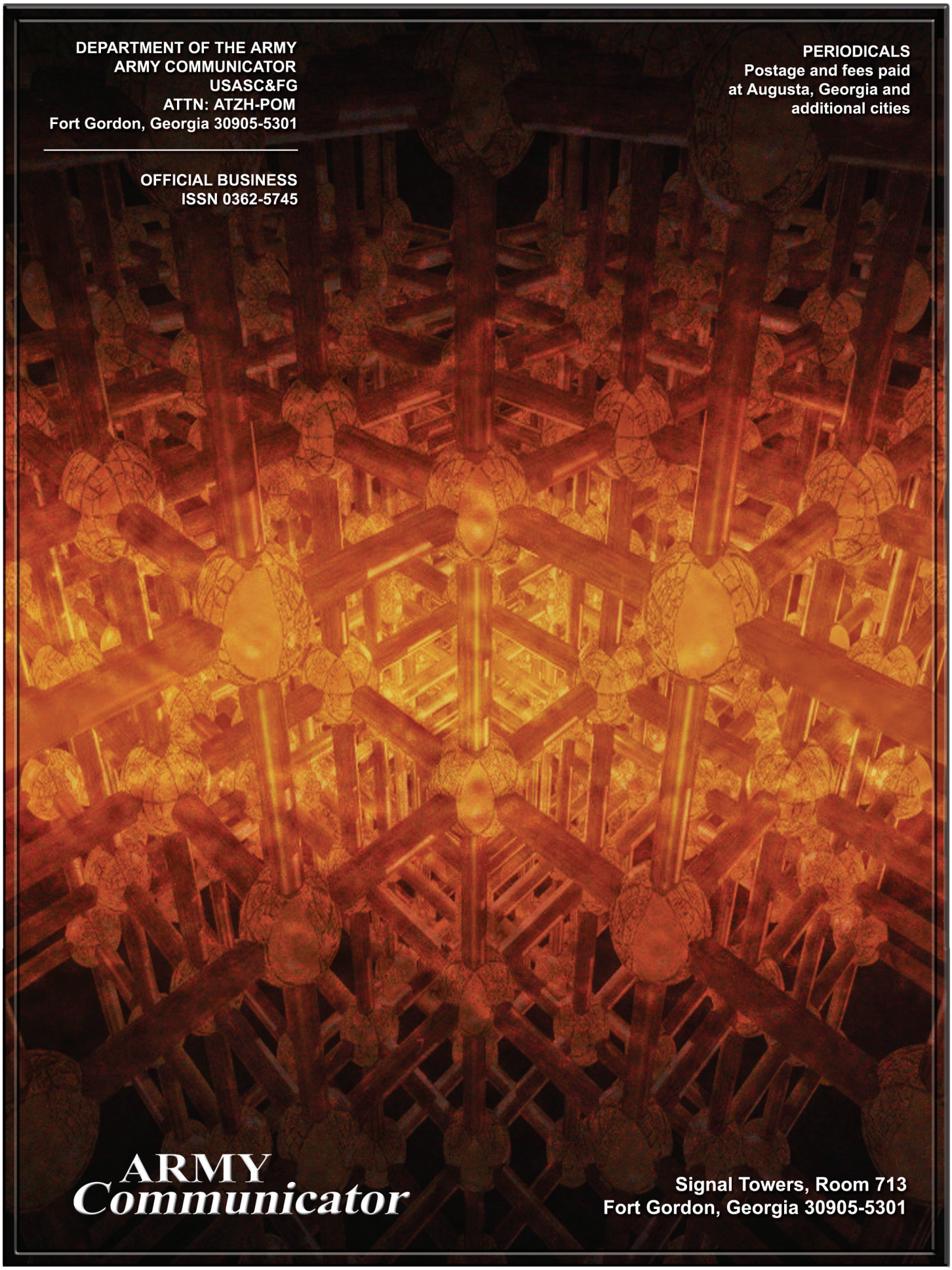

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